

Volume XXI. No. 4

Medical Lib

APR 24 1930

APRIL, 1930

Canadian Public Health Journal

Devoted to the Practice of
PREVENTIVE MEDICINE

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Department
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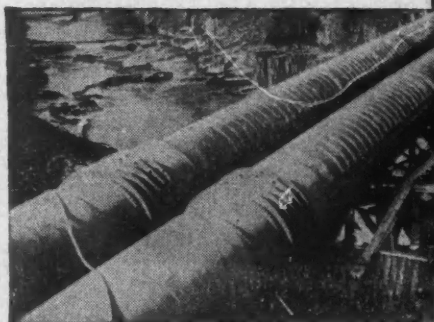
A Comment on "Cancer and Tuberculosis"
JAMES MILLER

A Dominion Medical Service
J. W. McINTOSH

Published by the
CANADIAN PUBLIC HEALTH ASSOCIATION

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H-7

The Preparation of a Budget and its Satisfactory Apportionment for a City with a Full-time Health Department*

F. ADAMS, M.D., D.P.H.

Medical Officer of Health for the Essex Border Municipalities

IT is usually considered that a minimum population of twenty-five thousand is necessary in order to support a full-time public health organization. One hesitates to speak on the preparation and distribution of a public health budget for a city of twenty-five thousand or more for the reason that conditions in various cities differ very widely, and what may apply with great force in one city may be distinctly unimportant in some other city.

The subject naturally divides itself into two parts: first, the obtaining of a satisfactory sum of money for an adequate health programme, and second, the wise spending of the sum appropriated. In the opinion of the writer the obtaining of a sufficient sum for a satisfactory health programme is essentially a matter of education, and by that is meant education of the appropriating body, usually the city council, and, what is equally or more important, the education of the taxpayer, because city councils are as a rule quite sensitive to public opinion. City aldermen and private citizens still exist who have an idea that the functions of a board of health consist of quarantining houses for infectious diseases and abating nuisances. Every one here no doubt knows that these two functions of a modern board of health barely rank as of major importance in modern public health practice. To educate councils and the people at large as to what a present day board of health should do, it is important to make the argument simple and understandable to the non-technical man on the street. If the argument can be reduced to dollars and cents so much the better. I had the good fortune quite early in my public health career to serve for a matter of six years on the Department of Health of the City of Toronto under Dr. Hastings, who I think every one will agree was out-

*Presented before the Annual Meeting, Ontario Health Officers' Association, the Parliament Buildings, Toronto, June, 1929.

standingly successful in getting a satisfactory appropriation for health purposes and in the wise spending of that appropriation. Dr. Hastings' methods would repay study by every one. Thoroughly convinced himself that no municipal expenditure pays such big dividends as the money spent on public health, he preached "health" in season and out of season. He convinced the city council, and, what was more important, convinced the citizens of Toronto that the expenditures he advised were wise expenditures, and after a few years there was no real difficulty about appropriations.

I remember well two arguments that Dr. Hastings used very effectively and these will serve as examples to be recommended. Almost immediately after he was appointed medical officer of health, Dr. Hastings set up a complete laboratory organization under the directorship of Dr. G. G. Nasmith. One of the jobs handed over to the laboratory was the examination and control of the city's milk supply. A few months' examination showed that a substantial proportion of the milk supply was watered. A few months' more work and the water was eliminated. After an ordinary arithmetical calculation we were able to show that in the previous years citizens of Toronto had paid some three hundred thousand dollars every year for milk which was in actual fact water and that we were saving that amount annually to the citizens. Three hundred thousand dollars in those days represented most of the appropriation of the city health department, so that it could be very effectively pointed out that this single new activity of the Board of Health had not only paid for itself but practically paid for all the other activities of the Department.

The second argument that I wish to quote has to do with typhoid fever. Dr. Hastings took over the Department of Health of the City of Toronto in 1910. In that year the typhoid death rate was over 40 per hundred thousand of population. In those days the population of the City of Toronto was approximately four hundred thousand so that we were having in the neighbourhood of 160 deaths each year from typhoid among about sixteen hundred cases. Mainly by making the milk supply and water supply of the city safe at all times, the typhoid death rate of 40 per hundred thousand in 1910 was cut down by 1914 to less than 2, representing a saving in lives per year of about a hundred and fifty and a saving in typhoid cases of about fifteen hundred. Typhoid fever, quite apart from sentiment, has an important economic side. Typhoid fever, in a wage earner, means loss of wages for about three months; it means the employment of a physician and nurses; it usually means a hospital, drugs and drug-store supplies. If the patient dies it means an undertaker's bill and a cemetery bill. It often means a social problem and municipal expense where the person who has died of typhoid was the wage-earning head of the family. We calculated the saving to the city of Toronto by the reduction of the typhoid death rate of 40 in 1910 to less than 2 in 1914, and were able to show that the

money saved to the city on typhoid alone exceeded the whole health department expenditure.

The same type of argument may be worked out for the reduction of sickness and saving of lives brought about by pre-natal work, child welfare work, immunization against diphtheria, etc.

One last word before I leave the question of obtaining a satisfactory appropriation for health purposes. Compared with other municipal departments, the department of health is not a large spender of money. A thirty-five mill tax rate is a common tax rate and it is exceptional to find the health department spending more than a mill. I do not wish to be understood as being of the opinion that one mill on the tax rate should be the limit for health department expenditure. What I wish to emphasize is that health departments as a rule spend perhaps less than three per cent of the total money spent by the city, and that a medical officer of health attempting to get an appropriation for a full public health programme is still a small spender among the various civic departments.

Passing now to the question of the spending of an appropriation already obtained, I judge that every health officer wishes to feel that the money is being spent so as to accomplish the maximum of good. In this connection it is necessary to consider carefully the needs of the particular community and to have accurate information as to the prevalence of, and deaths from, various preventable diseases. It is perhaps wise to say at this point that the board of health appropriation should be strictly for board of health purposes. A modern board of health has a perfectly definite function in the community in the prevention of disease. It is important not to becloud its function by taking on outside duties, such as the medical care of indigents, medical care of persons in jail, medical care of persons in the old people's home or the home of the friendless, medical care of city employees, etc. If these duties have to be assumed to keep peace in the municipal household, the appropriation for these outside purposes should at least be separated from the health department appropriation proper.

In considering how the health department appropriation should be spent, it is an essential principle that the most important things shall be done first. In the writer's opinion the first duty of the medical officer of health is to make sure that the city water supply is safe. It is probable that he will have nothing to do with the pumping of the water and he may have nothing to do directly with purification procedures, but he should see that the water supply is regularly examined in a bacteriological laboratory, and he should be in close touch with the members of the water board, have their confidence and be their adviser on the safety features of the water supply. In carrying out this function it may be necessary to spend a little money or to spend considerable. This all depends on the local situation and what facilities are available for laboratory examinations, etc.

Probably the next duty of the medical officer of health in order of importance is to see that the milk supply of the city is safe. Milk is so important and essential a food and at the same time so capable of transmitting disease if proper precautions are neglected, that the safeguarding of it must always be one of the health officer's first duties. It is perhaps not inappropriate to point out that pasteurization properly supervised by the health department will give more genuine protection for the money expended than any other form of activity aimed at the safeguarding of the milk supply.

Third in importance I would rate the providing of adequate isolation hospital accommodation. Quarantine is a necessary and useful method of controlling certain infectious diseases, but it is not popular. It may be rendered somewhat more palatable if provision is made for removing cases from boarding-houses, from hotels, from places where they interfere with the carrying on of a business, etc.

With these three matters provided for, I think we might consider the "Appraisal Form for City Health Work," sponsored by the American Public Health Association. This appraisal form is used in scoring health departments. The total number of marks is 1,000 and various marks are assigned to various health activities. This appraisal form can be used to indicate the various activities of a modern health department and the relative importance of each, and that is the purpose for which I propose to use it at this time.

The score of the latest appraisal form is shown (with some rearrangement of my own) in the following table:

TABLE I
APPRAISAL VALUES IN PUBLIC HEALTH ADMINISTRATION

<i>Score of Health Department activities:</i>	
Maternity Hygiene.....	80
Infant ".....	80
Pre-school ".....	80
School ".....	120
	<hr/>
	360
Tuberculosis control.....	90
Venereal Disease control.....	50
Other communicable diseases.....	160
	<hr/>
	300
Sanitation (including water).....	80
Milk and food control.....	70
Laboratory.....	60
Vital Statistics.....	50
Popular Health instruction.....	40
Cancer control.....	20
Heart Disease control.....	20
	<hr/>
	1,000

The appraisal form is a publication of 108 pages, complicated, and with many subsections under each section and it is impossible within the limits of this paper to discuss it thoroughly. I should like, however, to point out some of the outstanding features.

Maternity, Infant, Pre-school and School Hygiene and Cancer Control are largely educational. Popular education has a considerable part also in many other public health activities. If all the educational features of a full health programme were separated out and scored, the mark would undoubtedly be the largest assigned to any activity.

Under *Milk and Food Control*, 60 marks out of 70 are given for milk control alone, indicating the outstanding importance of this food. Also of the total score for milk, half is given for adequate pasteurization.

Under *Sanitation*, half the total score is for water and four-fifths of the remainder is for sewage disposal, leaving a very small value for routine sanitary inspections.

Under *Communicable Diseases*, the largest marks are given for active immunization against diphtheria and smallpox and for isolation hospital facilities.

The small values assigned to the historical semi-police functions of a health department, viz., quarantine and the abatement of nuisances, are notable.

In fairness to the eminent Canadian and American sanitarians who drew up the appraisal form, it should be pointed out that they have purposely given excess values to activities which need development. In the introduction to the appraisal form they say:

"In assigning values to the various sections, consideration has been given to the need for further development in the particular fields of activity, as well as to the relative importance of the activity in life-saving or health promotion. While a good, safe water supply transcends practically every other activity or requirement in importance, the fact that practically all American cities over 30,000 population are now reasonably well protected, has influenced the Committee in assigning the present value of this activity and for the moment emphasizing more strongly less well-developed services."

I am quite sure that not everyone will agree with the order of the listing in Table I, or with the values assigned to the various activities as indicating their importance. Public health is a new and big and growing science. What we should do and what we should leave alone and particularly what we should do first, second, and so on, offers an opportunity for much legitimate difference of opinion. It is, however, useful to have before one some kind of a list of accepted public health functions so that one may judge of the completeness of his own programme and consider how his appropriation for health purposes may be best distributed. For this purpose the appraisal form has this special virtue, that it attempts to assign values to various forms of health endeavour. It is the only publication that I know of that does this and I recommend it to you for consideration and discussion.

The Preservative Effect of Chlorine Compounds in Milk

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INTRODUCTION

DURING recent years the value of certain chlorine compounds as sterilizing agents for dairy utensils has been demonstrated by several workers, and in a number of districts these preparations are being widely employed. However, objections have been raised regarding the use of these products by the farmer on the grounds that he might be tempted to add small quantities to the milk as a preservative, although such addition would, of course, be illegal. Again, the point has been raised by Hoy and Rennie (1927) that "there is grave danger that chlorine will be added to the milk" where milk containers are treated with these compounds and not washed out again before being filled with milk. Since there is a strong possibility of chlorine being intentionally or accidentally introduced into milk, while conflicting opinions exist as to its effect, an attempt has been made to determine just what concentrations of representative commercial preparations will escape detection by taste, and how effective they are in inhibiting bacterial development in the milk.

REVIEW OF THE LITERATURE

Taylor (1919), while working with chlorinated lime for the sterilization of milk utensils, conducted an experiment to determine whether this substance could be used as a preservative in milk. The chlorinated lime was added to milk in concentrations varying from 20 to 10,000 parts per million available chlorine, and the milk allowed to stand at approximately 75°F. for 24 hours before examination. Since under these conditions only the higher concentrations sufficed to prevent souring, the conclusion was reached that "solutions of chlorinated lime cannot be used to preserve milk except in amounts which rendered the milk objectionable in colour, odour and taste."

Rupp (1922) in describing his method for the detection of hypochlorites and chloramines in milk remarks that the use of these compounds in the treatment of dairy utensils "has led to much speculation as to whether or not attempts might be made to add these preparations to milk." The microbiological influence of such an addition was not investigated.

Zoller and Eaton (1923), after studying the action of sodium hypochlorite in milk, report "a relatively low bactericidal effect, in view of its vigorous bactericidal action upon the bacterial cells themselves." Their interest being mainly in determining the possibilities of complete bacterial destruction in the milk, the preservative action of small quantities over longer periods at the storage temperature of milk was not investigated.

The rôle of active chlorine as a germicide in milk was also studied by Hale and Bleecker (1923). They concluded that "the reduction in numbers of bacteria was in general proportional to the amount of active chlorine present" and that "chlorine water gives as satisfactory

results in 45 minutes as sodium hypochlorite does in 90 minutes, or calcium hypochlorite does in 19 hours." These latter conclusions are open to question, however, since, as will subsequently appear, the bacterial count of chlorinated milk after an initial decline almost invariably shows a definite rise; hence a comparison of the count from one preparation after 45 minutes with that obtained from another after 19 hours is scarcely acceptable. Some data are also given concerning the effect of various concentrations of active chlorine upon the taste of the milk one hour later. No mention is made of the effect of concentrations less than 100 parts per million available chlorine over periods in the region of 18 hours' storage at 60°F.

The feasibility of improving keeping quality and destroying pathogens by adding bleaching powder solution to milk in the tropics has been studied by Mansell (1922), who reports the treatment to have been successful in both respects. However, since his samples of chlorinated milk were held in open beakers at temperatures ranging from 80° to over 100°F., he was able to add relatively large quantities of available chlorine and still have the flavour pass off within a few hours. This would not hold true in the case of milk in covered receptacles held at 60°F. or lower. Minett (1925) reports a few tests along similar lines from Hong Kong, concluding that although chlorination keeps milk sweet longer, it does not appear to kill out coliform organisms.

Prucha (1929) remarks "that these (chlorine) sterilizers cannot be used for treating the milk itself. Large amounts of them are required in order to produce any effect on bacteria in the milk, and the milk will acquire an off-flavour and will be spoiled before the bacteria in it are affected." No experimental evidence is offered on this point although in a previous paper (1927) he has pointed out the protective influence of small quantities of milk on the destruction of *B. coli* in aqueous solutions of chlorine sterilizers.

EXPERIMENTAL

Since sodium hypochlorite and chloramine-T preparations are the most commonly encountered, the products selected for study were liquid sodium hypochlorite (B-K), solid sodium hypochlorite (Diversol) and chloramine-T (Sterilac and Santamine). Preliminary tests confirmed the belief that the flavour imparted by the added chlorine would disappear more rapidly in an open container, and that the higher the temperature (at least up to 80°F.), the more rapid the disappearance. Therefore, in order to approximate the conditions under which milk is held on the average farm, 200 cc. lots of raw milk obtained from the Central Experimental Farm barn during milking were measured into sterile 200 cc. Erlenmeyer flasks; these flasks each contained the required amount of preservative, with the exception of the control blank. After filling with milk the flasks were closed with sterile stoppers, shaken and stored in the refrigerator at temperatures below 60°F. Plate counts were made following the Standard Methods of Milk Analysis (1928). The Rupp test (1922) for the detection of added chlorine and the methylene blue reduction test were also conducted at the conclusion of the storage period in the majority of cases.

Several series of preliminary experiments yielded results indicating that the hypochlorites were generally more effective than the chlora-

¹Since chloramine-T is affected by the presence of organic matter to a much smaller degree than the hypochlorites, it was expected that it would exert a more powerful antiseptic influence than the inorganic chlorine compounds. Consequently its failure to do so occasioned some surprise.

mine-T products¹ in inhibiting bacterial growth and that with each product the preservative influence was proportional to the concentration of available chlorine. It was also discovered in the third series, in which formaldehyde (which Chester and Brown (1905) have shown to be a very efficient milk preservative) was compared with the four chlorine compounds, that similar concentrations of preservatives differed considerably in their effect upon the flavour of the milk. Consequently, steps were taken to determine the "critical concentration" for each compound, *i.e.*, that concentration the flavour of which, after 18 hours' storage at $< 60^{\circ}\text{F.}$, could just barely be detected in comparison with a control sample. Sets of flasks containing freshly-drawn raw milk plus varying quantities of the different products being studied were made up and examined for off-flavour after 16 and 18 hours.² From the results obtained in five such sets the following critical concentrations were arrived at:

B-K.....	80	p.p.m.	available chlorine
Diversol.....	25	"	"
Santamine.....	75	"	"
Sterilac.....	60	"	"
Formalin.....	25	"	formaldehyde

Attention was then directed to the relative effect of the critical concentration of each product upon bacterial growth in milk. Freshly-drawn evening's milk was used in every instance, the preservative being added within 10 to 15 minutes after the milk was drawn. The flasks containing the treated milks and the control were stored overnight at temperatures ranging from 52° to 58°F. Analyses were conducted in all cases after 16 and 18 hours' storage, while in some of the earlier tests additional analyses were conducted after 14 hours. Data from two representative experiments appear in Tables 1 and 2, while Tables 3 and 4 contain the summarised results of bacterial counts and methylene blue reduction periods³ covering five experiments. The bacterial counts corresponding to the reduction periods for Experiment B are not available, since plates were not poured in high enough dilutions to enable satisfactory counting.

¹The 18-hour period was chosen as being representative of the average age of the bulk of the evening's milk on arrival at the milk plant in the larger cities. Where milk is delivered in a shorter period, the chances for the detection of an off-flavour from the added preservative are naturally increased.

²The author wishes to acknowledge his indebtedness to Mr. A. H. White, M.S., of the Dairy Research Division, Dairy and Cold Storage Branch, Dept. of Agriculture, Ottawa, for his assistance in determining the critical concentrations of the five compounds concerned.

³It was deemed worth while including the results of the methylene blue test since this test is commonly employed by milk distributors in estimating the keeping quality of incoming raw-milk supplies.

TABLE 1.—EFFECT OF CRITICAL CONCENTRATION OF PRESERVATIVE ON MILK OF MODERATELY HIGH BACTERIAL CONTENT

Hours after treatment		Temp. °F.	Control	B-K	Diversol	Santa-mine	Sterilac	HCHO
0	Plate count.....		416,000					
14	" ".....	52°	409,000	274,000	277,000	287,000	320,000	94,000
16	" ".....	53°	568,000	329,000	335,000	275,000	349,000	109,000
18	" ".....	55°	464,000	370,000	412,000	363,000	444,000	88,000
	Meth. blue reduction (minutes).....	..	20	60	20	20	20	195
	Curdling at R. T. (hours).....	..	<24	<24	<24	<24	<24	52
	Rupp test*.....	..	—	+++	+++	++	++	—

During the course of this investigation it was discovered that formaldehyde reacted to the Rupp test with approximately the same intensity as the chloramine-T products in equal concentrations. In 40 per cent of these experiments a concentration of 25 p.p.m. formaldehyde could be detected by this test. In the remainder, some colour changes took place after standing for several hours.

TABLE 2.—EFFECT OF CRITICAL CONCENTRATION OF PRESERVATIVE ON MILK OF LOW BACTERIAL COUNT

Hours after treatment		Temp. °F.	Control	B-K	Diversol	Santa-mine	Sterilac	HCHO
0	Plate count.....	..	5,100	.....	.....	.....	.....	.....
16	" ".....	52°	6,100	4,300	6,800	4,800	5,700	4,100
18	" ".....	54°	10,200	6,400	8,600	8,000	9,100	3,600
	Meth. blue reduction (minutes).....	..	720	820	750	800	810	900
	Curdling at R. T. (hours).....	..	>31<47	>31<47	>51<95	>51<95	147	>51<95

From the data given above it is obvious that formaldehyde is very much more effective as a milk preservative than any of the four chlorine compounds studied. It would appear, then, that there is little or no advantage to be gained by the addition of critical concentrations of chlorine compounds to milk which is promptly cooled to below 60°F. and stored at that temperature for 18 hours. In the case of milk not

TABLE 3.—EFFECT OF CRITICAL CONCENTRATION OF PRESERVATIVE AS MEASURED BY METHYLENE BLUE REDUCTION TEST

After 18 hours' storage	Temp. °F.	Control	B-K	Diversol	Santa- mine	Sterilac	HCHO
A. Reduction time in mins.	55°	20	60	20	20	20	195
B. " " "	68°	20	25	20	20	20	70
C. " " "	54°	375	454	380	395	398	508
D. " " "	54°	720	820	750	820	810	900
E. " " "	52°	420	465	460	475	445	435
Average (minutes)....	..	311	365	326	346	339	422

TABLE 4.—EFFECT OF CRITICAL CONCENTRATION OF PRESERVATIVE AS MEASURED BY STANDARD PLATE COUNT

After 18 hours' storage	Temp. °F.	Control	B-K	Diversol	Santa- mine	Sterilac	HCHO
A. Plate count.....	55°	464,000	370,000	412,000	363,000	444,000	88,000
B. " "	68°	?	?	?	?	?	?
C. " "	54°	18,900*	41,500	52,700	47,700	61,100	5,300
D. " "	54°	10,200	6,400	8,600	8,000	9,100	3,600
E. " "	52°	32,500	23,000	24,000	21,000	22,000	5,700
Average.....	..	131,400	110,225	124,325	109,925	135,050	25,650

*Count lowered through spreaders on triplicate plates.

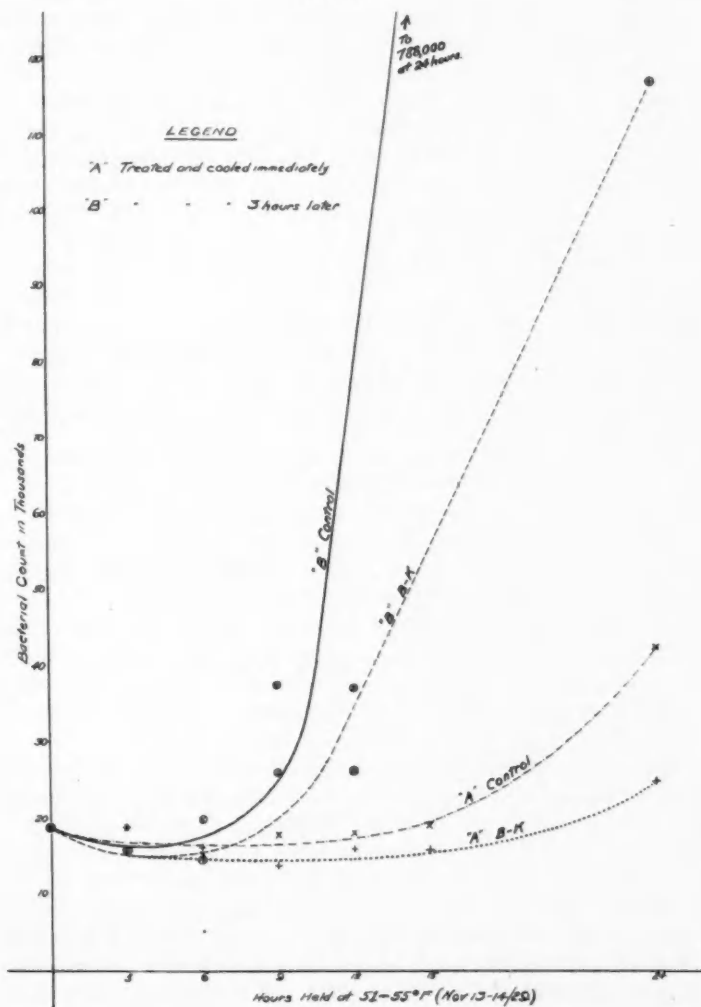
TABLE 5.—THE INFLUENCE OF DELAYED COOLING UPON THE PRESERVATIVE EFFECT OF NaOCl IN MILK

Hours after Treatment	Set "A," Milk Cooled at Once			Set "B," Milk Cooled 3 Hours Later		
	Temp. °F.	Control	B-K added	Temp. °F.	Control	B-K added
0	?	18,700	.....	80	18,800	.....
3	54	18,900	18,700	53	15,800	15,800
6	53	14,900	16,100	53	19,800	14,500
9	53	17,700	13,600	55	37,300	25,800
12	53	17,900	15,900	53	37,100	26,100
15	53	18,900	15,700	..	.....	.....
24	51	42,300	24,800	53	778,000	117,000
Meth. blue re- duction (mins.)	..	455	560	..	275	390

promptly cooled, however, it seemed possible that the effect of the preservatives might be more pronounced. To settle this point, an additional experiment was carried out. A quantity of freshly-drawn

milk was obtained from the dairy barn during the morning milking, and immediately brought to the laboratory some 80 yards distant. Two flasks, one containing the critical concentration of sodium hypochlorite

CHART I



(B-K) and the other a control, were made up at once, the control plated out, and both flasks (Set A) removed to the refrigerator. The remainder of the milk was allowed to stand in the warm laboratory for three hours, at the end of which time a second set of flasks (B) was pre-

pared and stored in the refrigerator. Analyses were then conducted on the contents of the flasks in each set as follows:—

Set A—3, 6, 9, 12, 15 and 24 hours after treatment.

Set B.—3, 6, 9, 12 “ 24 “ “ “

By this means it was hoped to obtain some information regarding the relative influence of chlorine preservatives in quickly cooled milk and in milk the cooling of which had been delayed for the first three hours. As will be seen from Table 5 and Chart 1, where the data from a typical experiment are given, the preservative effect is somewhat more noticeable in the case of the slowly cooled milk. Nevertheless, the loss in keeping quality due to slow cooling is so great that the untreated, promptly cooled milk is decidedly lower in bacterial content than the slowly cooled milk containing preservative. The marked influence of delayed cooling on subsequent bacterial growth is doubtless due to the effect upon the inherent germicidal action of the milk. Hunziker (1901) has clearly shown that in milk held at blood heat, the germicidal action is marked but of short duration, while in well cooled milk it is effective in inhibiting bacterial development over a much longer period. Consequently, there appears to be little possibility that chlorine compounds used as preservatives in milk will take the place of prompt and thorough cooling.

SUMMARY AND CONCLUSIONS

The preservative effect in milk of two hypochlorite and two chloramine-T products was compared with that of formaldehyde. Formaldehyde was found to be a much more effective milk preservative than any of the chlorine products studied.

Equivalent concentrations of chlorine compounds and of formaldehyde vary considerably in their effect upon the flavour of milk. A critical concentration (*i.e.*, maximum concentration not detectable by taste after 18 hours at $<60^{\circ}\text{F.}$) was established for each compound, and the influence of such critical concentration studied.

When added to freshly drawn milk which was quickly cooled, the influence of the critical concentration of each of the chlorine compounds 18 hours later was relatively slight. When added to milk which was not promptly cooled, the effect was more noticeable, yet the bacterial count increased so greatly as to preclude any possibility of chlorine preservatives taking the place of prompt and thorough cooling.

The influence of immediate cooling in prolonging the inherent germicidal action of milk is clearly shown in the final series of experiments, and illustrates the loss in keeping quality which follows delay in cooling the milk.

The author takes this opportunity of acknowledging the helpful suggestions of Dr. A. G. Lochhead, Dominion Agricultural Bacteriologist, during the course of these investigations.

For references to literature cited in the above see page 173

Some Aspects of Industrial Nursing*

MISS M. DOROTHEA MACDERMOT, REG.N.

AS an introduction to the paper in which we shall consider some aspects as well as some of the needs of industrial nursing, I should like to outline briefly its history, so that we may know what prompted those who were responsible for its establishment, and, also, that we may have some idea of its beginnings and development. We find on looking up various references on this subject that there is little record of the beginning. That necessity for some health work in industry was felt early in the industrial area, there is little doubt. Miss Wright, in her valuable book "Industrial Nursing," tells us that possibly the first mention made of health supervision of industrial workers was that made by Charles Dickens in his "American Notes." Even as early as 1842, when Dickens mentions such items of interest to us as the general healthy appearance of the workers, the air and lighting of the factory, the provision by the company of suitable rooming houses, duly supervised, a hospital, and recreation in the shape of a piano for the benefit and use of the employees, the women workers of this factory providing enjoyment for themselves by the publication of a periodical. No doubt the work done in this American factory was the first attempt made toward the establishment of what we now know as industrial medicine and its branches, including industrial nursing. Possibly several other attempts were made in this direction. There is little or no record of the results obtained. Any work of the kind that was done was undertaken privately by the employers. They felt a responsibility towards those whom they employed. We read of their relatives visiting the sick and distributing help. The attitude of employer to employee was paternal in its aspect, but it often led to much misunderstanding on both sides.

Probably the first programme of industrial medicine carried out along scientific lines was that which the Cadburys established in their factory. Their attitude, in contrast to that of former employers, was not so much that of bestowing charity on their workers; they provided a definite supervision of the health and welfare of the men and women working in their factory and they made a real attempt to establish preventive medicine. Their work has grown till to-day doctors, nurses, masseuses, convalescent homes and all that is necessary for the fulfilment of a good industrial health programme are supplied to the employees of this company. This work began in 1897.

Three years later New York began to consider this work in a more

*Presented at the Eighteenth Annual Meeting of the Canadian Public Health Association, Montreal, June, 1929.

practical way than they had heretofore. One of the large departmental stores employed a nurse for the purpose of visiting the homes of the employees. At first her work was chiefly confined to the supervision of the distribution of funds. Her experience gained from direct contact with the worker in the home taught her the necessity for this branch of industrial nursing, that is, the need for home supervision as well as that exercised over the worker in the plant. This was another step in the field of industrial nursing, that of widening the scope of the work.

Up to this point little is said of the workman's point of view on this subject. He had little or nothing to say in the organization of this work. It was always the employer who voiced the opinions of all. At this point, however, in the development of industrial nursing, the employee adds his influence to the work. In one particular plant the workers supplied the salary paid to the nurse. A still later development came when the employer began to realize that it was in his interest to exercise health supervision over the employee. To-day many concerns appropriate funds to devote to this service.

Perhaps the greatest move forward in industrial hygiene has been made in the past few years, the emphasis now being placed on prevention rather than on cure. To-day our interest is focused on the so-called well man and woman. Their welfare is not overshadowed by the care of the sick. Here it is most encouraging to note the response to this from the workers themselves, coming as they do for treatment early in the onset of disease, devoting more time to and seeing the necessity and importance of remedying minor defects. All this is tending to put industrial nursing and industrial medicine on a very much surer footing.

We, then, as industrial nurses have inherited this work. It behooves us to hand on to coming generations even higher standards of nursing. No living concern stands still. It progresses or it regresses. It progresses along well-defined, carefully directed lines or at random. Realizing this, we as public health nurses and more especially as industrial nurses, when we remember that our branch of nursing is not as well established as many other branches, should stop to consider whether industrial nursing is measuring up to the best that is required of it, and how best we may attain results which will make our work a benefit to the community.

If industrial nursing is an essential branch of public health nursing, there are certain points—three important ones—to which we might do well to turn our thoughts. Our foremost consideration should be of the choice of the nurse for industrial work. In the second place, What should an industrial nursing programme include? Thirdly, Are there any means by which the industrial nurse may become more familiar with the work and ideas of her fellow-workers? These three points we shall consider briefly.

The Choice of the Industrial Nurse

Miss Mary Gardner, in her book on public health nursing, a book which should be our guide in many ways, says: "Only well-trained nurses should be employed." What does this entail? Of very great importance is a training in a good school of nursing; this foundation is most essential, but is this sufficient? Is a nurse of recent graduation ready to undertake industrial nursing? Is a nurse of some years' experience in private duty nursing equipped to do this work? We should be agreed that such training as it stands to-day is not sufficient to fit a nurse to carry on any branch of public health nursing, more especially industrial nursing. The reason for this we shall consider later. Added to her three years' experience in a hospital, a nurse should have at least one or two years' experience in a smooth-running public health organization. Here she may get some idea of the various branches of the division of nursing. She may have supervision and training in how to carry on a public health programme. A change in her point of view is necessary, for when a nurse has been always thinking of the curative side of nursing, as she invariably does during her hospital training, it is difficult to suddenly reform her ideas, to have her think in terms of prevention as well as cure. Prevention is our first thought. Cure is necessary, but should not be over-emphasized. The aim of some cities is to have their public health nurses hold a certificate of a post-graduate course in public health nursing. This is, indeed, a high standard for us to maintain. It is not feasible for us to expect just yet that all public health nurses should have a university course, but we should insist upon public health experience in nurses undertaking this work. Important, too, is it for a nurse to have a working knowledge of the various agencies, philanthropic and medical, which operate in the city in which she works. In summing up this question of the choice of a nurse for industrial nursing, it should be the responsibility of those of us in the position to make this choice to see that as nearly as possible the nurse fulfils our expectation, and that she is adequately equipped to carry out the work required of her.

What Should the Programme of Industrial Nursing Include

Roughly speaking, the work may be divided under three headings:

1. Health supervision of the employee in the factory;
2. Health supervision in the homes again of the employee;
3. Some health supervision of the other inmates of the home.

Supervising in the factory necessitates some knowledge and understanding of lighting, ventilation, and sanitation of the plant. The nurse, especially in plants where a doctor is seldom found, is often called on to give evidence on these subjects. Added to this, is supervision of the cafeteria or restaurant which provides the mid-day meal for the employees. The industrial nurse is invaluable in an advisory capacity

regarding the best kind of food for this purpose, the arrangement of the menu and the serving of a nourishing substantial meal. Examination of the new employee and existing workers also is included in this branch of the work. Although the actual examination is done by the doctor in charge, the nurse may often be of assistance in helping the patient carry out the doctor's instructions. She may arrange for defects to be remedied at least expense and in a way most beneficial to the worker. She should encourage and urge the employee to have any such defects remedied. In the case of younger workers, if the boy or girl is found to be below par the nurse can assist materially by talking the matter over, and by arranging for extra diet during working hours. In these and in many other ways the industrial nurse may aid in the health supervision of the man in the plant.

This supervision is not sufficient, however, if it stops there; it must be carried into the home. Here again the nurse may visit, advise if medical care is necessary, arrange for it, and, if nursing care is needed, see that it be provided. In cases when hospitalization or convalescent care is called for, the industrial nurse can be of great assistance. Even if she only persuades the worker of the necessity for this care and helps to break down old prejudices, her work is not in vain.

Now, having once made her entrée in the home, the nurse is able to fulfil her programme, to advise as to the care of the mother, baby and other members of the family. This sometimes requires much tact, but, having once established a contact with the family, it is not difficult to carry out this part of the work, and, with the help of other public health nursing organizations, establish excellent health supervision.

What Means Shall We Adopt to Aid the Industrial Nurse in Fulfilling the Programme Which is Hers to Plan?

By this we mean: Is there no way in which nurses doing work in one place may come to know what is being done elsewhere? At present, in Montreal at any rate, each industrial nurse is working very much alone. She seldom if ever sees or has an opportunity of meeting her fellow workers. There are no chances for interchange of ideas, for those of us with only a little knowledge or experience to gain further knowledge, to widen our point of view, our outlook. On the other hand, the experienced workers of this branch of public health nursing have no way of expressing their opinion, of saying where they have gone wrong, and where they have been able to make improvements. All this interchange of ideas and experiences is most valuable. It is what we all require if we are to keep abreast of the times. Each of us can make some contribution for the enlargement of our work. This is denied us unless there is some opportunity for discussion of the problems which we meet daily. Any organized branch of public health nursing has staff meetings for just such a purpose. The result

is change here, widening there and consequent growth of the work. Why should not the industrial nurse have some such chance to discuss, to change where necessary, and to give more impetus to her work? Isolated workers anywhere are always at a disadvantage. Working alone as so many industrial nurses do, leads to unnecessary discouragement. Where there is no interchange of ideas, there is little hope of change of idea.

Very briefly in this paper, I have endeavoured to bring before you certain needs of industrial nursing to-day, to place before you suggestions that should enable us to do better work. Some years ago it was no uncommon occurrence to hear it said that this work of treating small ailments, of examining well men, was overdone; that it was hardly necessary. To-day those ideas are fast disappearing. The public is realizing the importance and necessity of not waiting till it is too late. The people are demanding early treatment, knowing that, if for no other reason, it is certainly less expensive to keep well than to be ill. These signs of the times should encourage us to widen our activities so that in years to come Montreal and Canada as a whole may be providing adequate health service for our working citizens, and that we as industrial nurses may be able to feel that through our influence there have come better supervision of health in our factories, hospitalization, convalescent care and recreation for all.

(Continued from page 168)

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A Comment on "Cancer and Tuberculosis"

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AN excellent paper under this heading appeared in the December number of the JOURNAL, and as I dealt somewhat curtly with the matter in the November issue, taking up a position diametrically opposed to that of Dr. McIntosh, I feel that a few more words in support of my attitude are called for. I am indebted to Dr. McIntosh for directing my attention to Dr. Raymond Pearl's paper, which I have read with great interest.

That carcinoma and active tuberculosis comparatively seldom occur together in the same subject is in my experience a fact, but that is a long way from proving that the two diseases are mutually antagonistic. My experience as a morbid anatomist extending now over a period of thirty years in such varied centres as Birmingham, Edinburgh and Kingston, Ontario, would lead me to the conclusion that two active conditions of any nature are comparatively seldom present in the same individual. It is the case that one is constantly coming across evidence of old disease, perhaps of several antecedent diseases, in the scar stage along with active disease of another kind but two diseases are seldom found together in the florid state. I would suggest that Dr. Raymond Pearl investigate statistically the occurrence of carcinoma and active syphilis and of carcinoma and Bright's disease. It is probable that he will find the same rarity of association. The explanation may be that a body which is already the prey of some active condition does not form a suitable nidus for the growth of cancer or perhaps it is that the calling out of antibodies by a specific virus produces a condition in which carcinoma finds it difficult to establish itself.

Let me recall the occasion of the casual remarks in my paper on bovine tuberculosis. In 1901, at the British Congress on Tuberculosis in London, Koch made a statement in no uncertain terms that bovine infection played a negligible part in human tuberculosis. He was at once attacked by a number of writers and investigators and some of his friends rallied to his aid. Amongst the latter was Baumgarten, who in a paper (Berlin, klin, Wochen, 1901, No. 35, p. 894) cited an investigation which he had personal knowledge of. He mentions no names as the experiments, carried out as they were on the human subject, were somewhat daring. Baumgarten's friend, at that time a prosecutor or

pathologist in a large hospital, conceived the notion of testing out the Rokitansky dictum that the two diseases, tubercle and cancer, were mutually antagonistic, and he injected a number of hopeless cases of carcinoma and sarcoma with living tubercle bacilli subcutaneously in large amounts. The particular strain of tubercle bacilli which was selected was, to Baumgarten's knowledge, a bovine one. The result of the series of experiments was that not one of the patients developed even locally at the site of inoculation evidence of tuberculous disease. The cases all eventually came to the autopsy table and an exhaustive examination failed to reveal any evidence of tubercle either at the site of inoculation or in the interior of the body. Microscopic investigation confirmed this. It may be added that no mention is made of any favourable effect of the inoculations upon the malignant disease. Two possible deductions might be drawn from these results: one that the bovine tubercle bacillus was relatively avirulent for the human subject and this was Baumgarten's conclusion. The other possible deduction was that the cancer patient is not a suitable nidus for the growth of the tubercle bacillus. This Baumgarten dismisses as improbable and indeed he treats the Rokitansky dictum with scant respect.

I have not the intimate knowledge of the literature of this subject which Dr. Pearl possesses but as it happens I have come upon one or two recent papers which deal with the matter. The first, on "Primary Carcinoma of the Lung," appeared in the *Quarterly Journal of Medicine*, April, 1929, p. 413. The paper, which is a very careful one, coming from the pathological department of the London hospital, deals with 139 cases of the disease which were admitted to the hospital between 1907 and 1925. In dealing with the possible causes of the cancer, prominence is given to tuberculosis as a factor. Admittedly the relationship is a disputed one and the author quotes Morris and Landis as reporting 662 autopsies on malignant lungs with no instance of tuberculosis. Still, positive evidence is more significant than negative and in the series of cases from the London Hospital, 47 showed some evidence of tuberculosis, and of these six showed active disease. Seven showed healed tuberculous nodules and thirty showed calcareous glands in or about the hilum and in four cases tuberculous mesenteric glands were found. The author quotes a number of authorities who support the view that tubercle predisposes to cancer, notably Cherry (*Med. Jour., Australia*, 1925, p. 581), who believes that cancer attacks in later life those who have overcome tubercle in early life. He considers that acquired resistance to tuberculosis is the predisposing cause of cancer. It is interesting that Cherry treats the question from the statistical point of view and comes to a diametrically opposite conclusion from Dr. Pearl.

Ewing (*Neoplastic Diseases*, 1928), to whom we all turn in matters connected with tumour growths, is apparently a believer in tubercle as a factor in the etiology of cancer. He says, p. 131, "That there is

something specific in the tuberculous process (as a cause of cancer) is suggested by the greater frequency of epithelioma after lupus than with simple chronic eczema." As regards carcinoma of the lung, he says (p. 852): "The chief etiological factor is tuberculosis," and he supports this view by weighty evidence.

Sampson Handley, in an article on "Lymph Stasis, the Precursor of Cancer" (*Can. Med. Assoc. Journal*, Nov., 1929), says "Tuberculous lupus, especially of the nonulcerative variety known as lupus erythematosus, is followed, in a certain proportion of cases, by the appearance of warts upon the scarred surface, and one or more of these warts may develop into carcinoma. Lupus carcinoma has been stated to be an X-ray carcinoma, and it may have become more frequent since the discovery of X-rays, but it was quite common before X-rays were known, and it is a natural evolution of the disease process known as lupus." Mr. Handley also quotes the experimental work of Dr. Thomas Cherry (*loc. cit.*) in which he made subcuticular injections of active tubercle bacilli in mice and was thereby able to raise the incidence of malignant tumours in these animals to a significant extent.

It is a little difficult to follow Dr. Pearl's line of reasoning in the methods which he has started to deal with carcinoma therapeutically. He claims that "Healed tuberculous lesions (apical scars, calcified tubercles in glands) occur with equal frequency in the malignancy and control groups, whether they are taken as wholes or when carcinoma and sarcoma are separately treated." It is active tuberculous disease, therefore, which, according to Dr. Pearl, is the antagonistic element. Yet he, or rather Dr. Allan C. Sutton, is producing immunity in his cancer patients by injecting tuberculin, a condition analogous to the state of the individual with the healed lesion. Of course he is injecting tubercle toxin but the amount of that is likely to be negligible in the doses of tuberculin given.

From the above it is clear that there are two sides to this question. There is a group of authorities which claims that active tuberculous disease is antagonistic to carcinoma and another group which states that tubercle is one of the recognized causes of malignancy. Both cannot be right. No one questions the facts that tuberculous disease is on the downgrade, has indeed diminished enormously in the last thirty years whereas cancer has probably increased even when the question of more accurate methods of diagnosis is taken into consideration. Tuberculosis, however, is a disease of early life, whereas carcinoma occurs by far most frequently after the age of forty. It would take more than statistical evidence to prove that the diminution in the amount of tuberculosis has much to do with the apparent increase in the prevalence of malignancy.

A Dominion Medical Service

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BY a Dominion or Canadian Medical Service is here meant a group of medical men who are employed in any of the public services requiring men with training in any branch of medicine.

GENERAL CONSIDERATION

In the British North America Act it was explicitly laid down that certain powers were placed under federal jurisdiction—certain other powers were specifically relegated to the individual provinces, all other powers not so specified were to be held under the Dominion. Education was placed under the provinces, and with such differences as we have in the various provinces, no one would gainsay that there it should remain. Logically, health of body and soundness and training of mind should be more or less intimately connected. Ever since Confederation public health matters, except as appertaining to distinctly federal concerns, have been handled, along with education, by the provinces, and the federal authorities have gone on record as recognizing the individual provinces in this regard. This being the case, and the provinces evincing no desire to reject the responsibilities which they have accepted and coped with since their union with the Dominion, such responsibilities are likely to remain as theirs. This, however, should in no way interfere with the idea of a united service, as far as the medical officers and their variously assigned variety of service are concerned, just as the Royal Canadian Mounted Police service has, by request, assumed provincial duties; or just as in British Columbia, for example, the police services of certain municipalities have, by mutual consent, been taken on by the provincial police; or just as officers in the Canadian Army Medical Corps were responsible to a double authority.

NEED FOR SUCH A SERVICE

This is a triangle, including the Public Service Angle, the Doctor's Angle and the People's Angle.

The Public Service Angle

Public positions are largely now sought by men trained for, and serving in private practice, who often look upon the positions as an extra, a stepping-stone until a lucrative practice is gained. No man can serve two masters equally well—practice is a first call, the other an

extra—*coeteris paribus*,—private practice is likely to get the better. What is wanted and required is full-time service of men, whose heart is in the public service, by preference away from competition of practice. What substitute is there for the urge of competition in private practice? Hope for promotion is a graded-for-merit service! The public service needs relief from political influence and a guarantee of tenure replacing changes with the party in power. Full-time men are wanted, undistracted by private practice, with the necessary training, experience, and skill adaptable to the varied service required. For medical officers of health, for example, more and more is it realized that what is required is the service of full-time men.

This is amply evidenced by the changes to full-time men in the British service, its growth in the United States of America, where the finances are assisted by federal, state and local bodies. Canada is gradually tending the same way. The need for supplying consultants by state and other public health departments is growing ever more, e.g. New York City Public Health Department offers to the profession and the people the best consultants in difficulties of diagnosis and treatment of anterior poliomyelitis. This was done also in Manitoba, in the epidemic of 1929. In certain rural areas there is a great need of a state service which might make available an able surgeon, specialist, or internist, under special circumstances.

The Doctor's Angle

What inducements and advantages (or compensations) are there in a full-time public service over private practice? A competence from the outset! Provision for old age by a pension system! Full-time service, but not likely on a 24-hour day or a 365-day year! Wear and tear of responsibility divided by a system of advisors and consultants! A certain standing in the community assured! The necessary wire-pulling to get positions and the call to be a "joiner" removed! A chance to rise on a graded merit system!

The People's Angle

A private practitioner is trained and practised in the cure of disease, rather than prevention. For the man in the public service, prevention is his chief aim and end. Preventive medicine has increased the average span of life by 15 years in the last 50. The economic value of this service in dollars and cents is therefore tremendous, though scarcely realized by the people.

Many citizens more and more realize the limitation of individual personality, and the need for the realization of the unity of mankind. They find incentives thereto in the scientific study of heredity and in the trend of social tendencies. They may react more and more on the question at issue of private practice and public health service.

THE SCOPE, NATURE AND COMPOSITION OF THE SERVICE

Dominion-wide the various public medical services extend, but as the points are widely scattered, and there is such a variety of service, it would seem impossible to go much further with full-time employees,

unless some plan could be devised for federal co-operation with the various provincial and municipal services, and perhaps with growth into an even wider sphere. An attempt is made here to outline a plan that seems feasible.

In Great Britain the sphere of national public health services is wide, including the national health insurance and maternity benefits departments, and comes largely under the Ministry of Health. In the United States of America federal health matters are taken care of by the United States Public Health Service, under full-time men. This service also co-operates with the individual states in many ways, in supplying experts, undertaking investigations, and even supplying finances, as in meeting part of the expenses of full-time medical officers, in the county health unit system. In Canada, it would seem best to have this service organized federally under a commission, say of three, appointed by and responsible only to Parliament, as with the Workmen's Compensation Board in British Columbia, thus reducing the chances of political interference to a minimum.

The duties of the commission would best include:

(1) The enrolment of full-time men for public services by examination, such as recognizing that of the Dominion Medical Council, or otherwise after a D.P.H. or other special course.

(2) To arrange for provincial co-operation, in agreeing to the appointment of full-time men from this service for all provincial or municipal public health or other medical services.

(3) To supply men from this service for staffs or appointment to various departments in the federal, provincial, or municipal fields, or such other services as might from time to time be agreed.

(4) To correlate the work of the various services, federal, provincial, municipal or other, so that a man would be eligible to take different appointments from more than one source, in order that two or more positions each of which would require, otherwise, only part-time men, would be held by one full-time service man or more as required. At present one man in private practice often holds positions from dual sources.

(5) The commission to have power to approve a part-time man appointment, under conditions where the nature or location of the services be not such as to require a full-time man.

(6) To formulate regulations to provide for a man transferring from the service to private practice, and *vice versa*.

This is not State Medicine, so-called, which proposes to do away with private practice and enrol physicians in practice under the State. The idea behind this is to get away as far as possible from men in private practice holding appointment for public medical service. It suggests using full-time men for all public medical positions, whether federal, provincial or municipal, wherever feasible. For an example of what it renders possible, take the following. At a certain port the Federal Department requires part-time service as a harbour or port medical officer; this is given to a man in private practice. The Provincial Government requires a coroner for part-time work; this goes to another private practitioner, or possibly the same. The municipality

appoints as jail surgeon a doctor in private practice. Under a Dominion Medical Service, a full-time man would be appointed to look after all three positions and be responsible to and paid by each of the three authorities respectively.

This brings us to a consideration of the organization of the official public health authorities, federal, provincial and municipal, as constituted at present with suggestions as to how the various duties and services of these bodies might be correlated or advanced.

FEDERAL MEDICAL SERVICES

The *Ministry of Pensions and National Health* is presided over by a Minister of the Crown, with a Deputy Minister (an expert public health official) under him.

The *Dominion Council of Health* is an advisory body, comprised of the federal deputy-minister as chairman, together with the chief executive officer of health of each of the provinces, also five others, including two representatives of women's welfare activities, one each from the east and the west, another member represents the dairying industry, a labour representative, and a representative of public health educational institutions.

This body could be a very important factor in a consultative advisory capacity, with the proposed *Dominion Medical Service Commission*, in advancing the co-ordination of the various public health bodies interested. This commission should be appointed by and answerable only to the House of Commons, and composed of say three members, with duties such as those suggested previously.

At present under the Ministry of Pensions and National Health are included the following branches:—

Central Laboratory of Hygiene; Administration of Opium and Narcotic Drugs Act, Immigration and Quarantine Stations, Leper Colonies, Marine Hospitals, Public Health Works Act; Division of V.D. Control; Child Welfare, and Public Health Publications. In these branches men of the medical profession are already largely engaged in full-time service. There are also divisions employing part-time men, who are chiefly otherwise engaged in private practice. Such are local pension medical boards; S.C.R. hospital medical staffs; harbour or port medical officers.

Though most of the federal medical services have been placed under the Ministry of Pensions and National Health, there are some important services, which for various reasons come under other departments, necessitating the employment of physicians or experts responsible to these various heads. Under the Department of the Interior comes the care of the Indians, wards of the government, and of the Esquimaux, the former calling for a regular medical service. In almost every instance the physicians to the Indians on the various reserves are men in private practice, where the Indian appointment in addition calls for a varying proportion of the doctor's attention, according to the number, location and size of the Indian reserves under his care.

In a federal service, inasfar as possible, through the co-ordination of the commission, the work among the Indians and the Esquimaux, the medical requirements of the Royal Canadian Mounted Police, the port medical officers, the medical services on public works construction and in connection with the C.N.R. employees, and, as far as practicable, civil service medical examinations, should be placed under full-time men, registered in the proposed medical service, who, of course, would also be available to take on whatever medical duties, under provincial or municipal authorities, might be available or required at or near the same points or areas.

Bearing directly on the health of the public is the Division of Meat Inspection, certain administration of the Canned Foods Act, and the various federal veterinarian requirements of inspection, or otherwise. This, sooner or later, if found feasible and thought advisable, might possibly be placed under the same commission, as these branches usually intermingle more or less closely with man's public health requirements.

Research work relative to the public health would naturally come under the same service, as might also the problems of health insurance, maternal benefits, and workmen's compensation, in conjunction with the various provinces, as these exist now, or may materialize in the future.

County Public Health Units

Of far-reaching importance is the plan outlined by Dr. J. W. S. McCullough, Chief Inspector, Department of Health, Ontario, for federal, provincial, and municipal co-ordination, or at least co-operation, in the organization and maintenance (financially) of full-time county public health units. This is to be touched upon more fully later.

Cancer

Dr. Ewing, Professor of Pathology, Cornell University, and Director of Cancer Research Memorial Hospital, New York City (*vide* U.S.P.H. Reports, Vol. IV, No. 35, August 30th, 1929, pp. 2093-2101), in an excellent article, has outlined the history of the efforts at public health control of cancer diagnosis and treatment, first in Sweden, then Norway, Denmark, and Great Britain, in rotation. In the United States, Massachusetts is the first state to take action. The city of Buffalo, in succession, is the first body to imitate Sweden, and make the cancer service mandatory. Research activities in the United States, he considers, should be centered in the Hygienic Laboratory of the Public Health Service.

Canada is in a position to profit by the experience of these countries, advanced in handling the cancer question from a vigorous public health angle. That experience points towards the federal government taking over laboratory research. The Dominion Council of Health and the proposed Dominion Medical Service Commission would be in an ideal position to advance the status of cancer institutions or hospitals, for diagnosis, and treatment, and follow-up work, at say four points to begin with, for instance, one in the Maritimes, one each in Montreal, Toronto and Vancouver in the West. In this manner they would be following the example of Great Britain.

Ewing makes the statement that from now on *cancer will be recognized as a public health problem.*

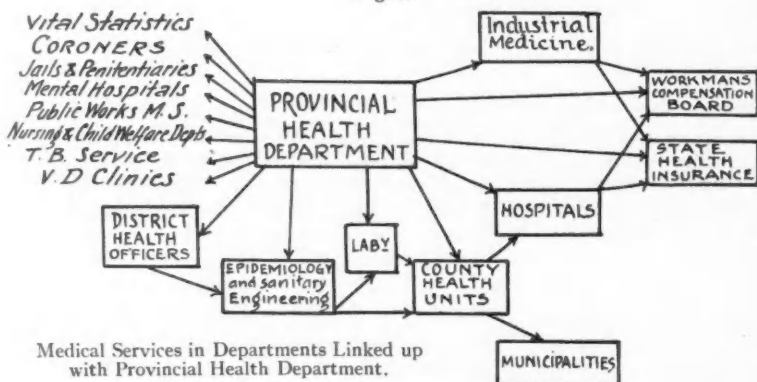
Outside of such informed advisers, cancer propaganda amongst the public may be dangerous, and prove a boomerang. Regarding cancer service to-day, it is recognized by those best competent to express themselves in this connection, that it must be regarded as a medical specialty, which can best be conducted in special cancer hospitals, or larger, broadly organized cancer institutes.

The primary duty of public health officials is to convince themselves of the necessity for such action, and then interest ever-widening circles, till results are secured, and the people by experience are convinced that ways and means are in the right direction for accomplishing results. Confidence will then take the place of the present fear, not only of the disease, but of many painful disasters of misdirected treatment.

PROVINCIAL PUBLIC HEALTH SERVICES

In considering the question of a Dominion Medical Service in connection with provincial affairs, one enters the arena of preventive medicine, for, as already pointed out, with the individual province lies the chief control of public health, either directly under the provincial health department, or indirectly under the municipalities.

Fig. I.



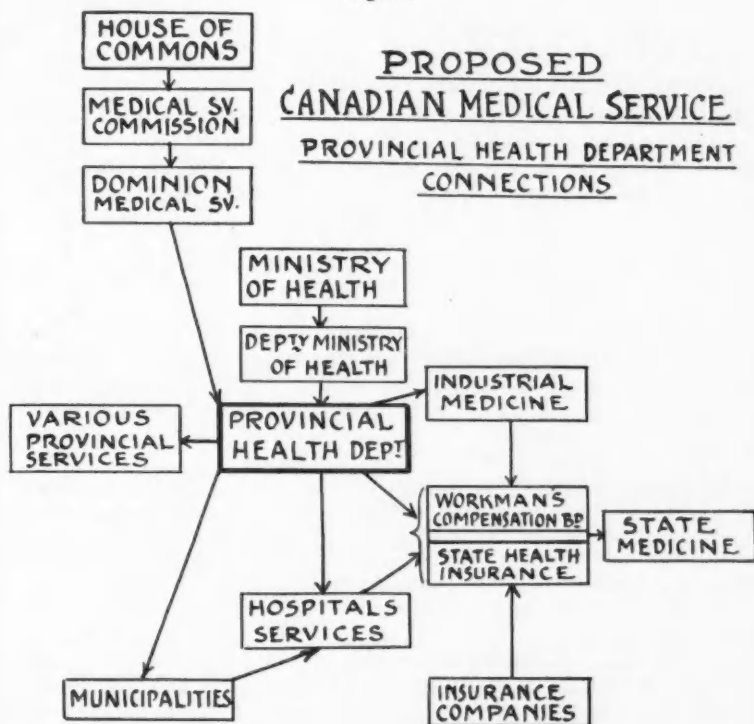
To picture the provincial services at a glance, two graphs or charts are presented, one, of most of the branches which are or may be directly or indirectly associated with the public health department; the other offering a plan to link up provincial interests with federal, for the purposes of the proposed Dominion Medical Service. So-called State Medicine is only shown for the benefit of those medical men, for example many on the prairies, who see the need of some service calculated to serve outlying areas better than they are now served, or neglected, under private practice.

County Public Health Units

Regarding the need for full-time men in public health work, it seems hardly necessary here to expand upon the topic of county health units, but one may be referred to the able presentations of the subject in this journal and elsewhere, by Dr. J. W. S. McCullough, Chief Inspector, Department of Health, Ontario, and by Professor J. G. FitzGerald, Director of the School of Hygiene and Connaught Laboratories, Toronto, also to the former's outline of the plan of establishing county public health units, with federal and provincial aid, as the best way out of the shortcomings of the present time in Canada, in preventive medicine. The great success of this system is well exemplified in Quebec where public health is making such rapid strides and where already seventeen units are in operation, and in Saskatchewan, and to a lesser extent in British Columbia.

Metropolitan health boards of cities with their suburbs, or of a group of cities, so well exemplified and so successful in the Essex County Border Cities, Ontario, are instances amongst the many of ways in which preventive medicine gains in efficiency, and probably the greatest individual gain results from the opportunity afforded of securing full-time men.

Fig. II.



PSYCHIATRY

Amongst the advantageous opportunities afforded by such a medical service would be that of linking up the various departments whereby those with a knowledge of psychiatry and other mental specialties would be made available in the institutions for the diagnosis, treatment and detention of mental diseases. They would be available, too, in keeping with the growing recognition of the advantage or need of psychiatrists for association with jails and penitentiaries and courts for the trial of delinquents from the law, such as, not only juvenile courts, but also criminal courts, and coroner's trials or investigations. These specialists, engaged in the full-time service, could be made available as a portion of the group which would include consulting surgeons, specialists and internists, as already outlined, not only for the above work, but for private practitioners, in their constant call to certify citizens for treatment or detention in an insane asylum or other mental hospital.

In the Seattle Juvenile Court, the chief probation officer is a doctor and a psychiatrist. By the Hungarian method, a medical officer is associated with the courts, who is both physician and psychiatrist, and who makes mental tests of accused or witnesses when desired. This seems a progressive step.

A medical service, with full-time men linking up all these various services, some of course already so manned, would go a long way

towards separating the work of public health in its various phases from the often haphazard attention it receives at the hands of men whose main outlook is in private medical practice. Where now there may be a minor federal appointment for example, going to a part-time man, often, by a properly co-ordinated service, it, together with provincial or municipal appointments, could be adequately and satisfactorily handled by full-time men in the service, holding thus joint appointments, whether federal, provincial, municipal, or other.

MUNICIPAL PUBLIC HEALTH AND A CANADIAN MEDICAL SERVICE

In considering this division of the subject, one need not traverse again the ground already covered, but simply enumerate the various branches requiring some public medical service, and accentuate the advantages to be derived in the municipal sphere, from the proposed Canadian Medical Service.

A Canada-wide medical service would not only supply full-time men for county units, and for health departments of larger cities, or metropolitan health boards such as that one time proposed for Vancouver and surrounding municipalities, but of union health boards such as the Essex-Border Cities in Ontario, and municipal union boards, provision for which is made in the British Columbia Public Health Act—there being no counties in British Columbia.

In certain instances where it might seem inadvisable or not feasible to establish county health units, the opportunities for using full-time men would be greatly enhanced by pooling all public health medical services, as outlined.

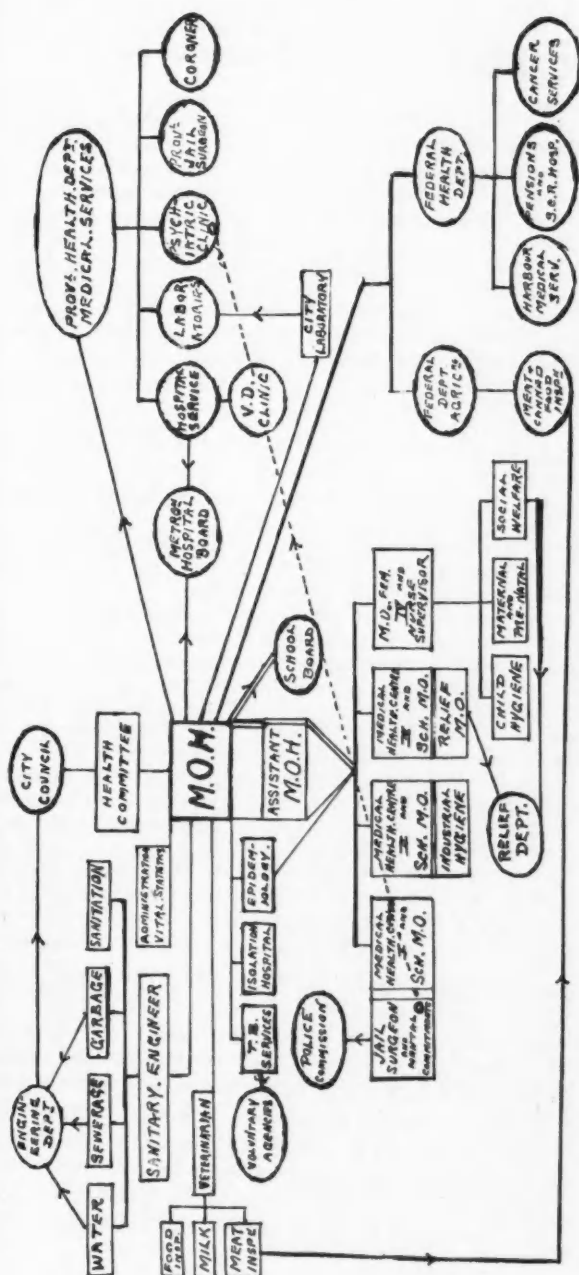
Benefit would accrue from including in one, certain municipal services, now held largely by two or more men in private practice, under the municipal health department. Examples are a jail surgeonship and medical officer of a relief department, for the purposes of diagnosis, the elimination of malingerers, estimation of disability, suggesting treatment or other disposition and for prognosis in case of applicants for relief. The desirability of such services provided for out of municipal revenue being placed directly under the municipal health department, and under full-time men who are not involved in private practice, seems so obvious, that the arguments need not be repeated.

Public Health Laboratories

Any disadvantages hitherto arising out of both unit and dual laboratory services would likely be largely minimized under the suggested plan of a single Dominion medical service of full-time men.

Here attention may be directed to the advantages to be derived from full-time medical administrative officers under one medical service as proposed, for all public hospitals.

The advantages of being able to place practically all public schools under full-time medical men, whether the school medical services are under the direct control of school boards, or health departments, are obvious, and the testimony from all localities under either system bears this out.



PUBLIC HEALTH DEPARTMENT

SUGGESTED ORGANIZATION FOR CITY WITH POPULATION OF 250,000

Showing connections with—Federal Health Dept., Federal Agriculture Dept., Provincial Health Dept., City School Board, Police Commission, City Engineering Dept., Voluntary Agencies relative to full-time Medical Officers.

The results would not be likely to vary materially, whether the communities were served by city health departments, under metropolitan health boards, union health boards, or were in unorganized districts directly under the control of provincial health departments.

In Great Britain the school medical services in the various districts come under the Ministry of Health. In Canada, the practice varies as to whether administration is under the school board or the health department. Instances of both may be cited for comparison; *e.g.* in Vancouver, the service is directly under the school board; in Toronto, the school medical service and the health board are a unit. The comparison may be considered under cost, and under results achieved.

Cost. As regards cost of school medical services, there may probably be little or no difference for identical service; any difference would probably be in the direction of diminishing expenditure, by the transfer of such work as artificial immunization, by the school staff, to pre-school ages, linked up with other child-welfare activities under the health department.

Efficiency. Results may be divided into:

1st. Those secured with the school children.

2nd. Those in the home.

3rd. Those standing in relation to or reacting on other phases of the public health service.

(1) Any difference to the school children, under similar conditions, is practically nil.

(2) The school nursing service combined or co-ordinated with the public health nursing service, redounds greatly to the advantage of the other public health services, as far as the work in the home is concerned.

(3) A studious comparison of the two systems, as exemplified in Toronto and Vancouver, revealed little or no advantage of the one over the other, as far as school results are concerned, but when considered in its interaction with other spheres of the health department's work, Toronto's system of a combined service showed decided advantages in securing of earlier immunization to, and consequent control over contagious disease, and in the co-ordinated efforts in such departments as child welfare in the early correction of physical disabilities; in pre- and post-natal and maternity care; in education along the lines of preventive medicine and dentistry in all its angles; and also in the continuity of service up to, during, and after school age; together with opportunities for earlier and more accurate historical and statistical records. Authorities generally are of the opinion that an undivided control of school medical services, and public health departments, so well exemplified in Toronto, has very decided advantages, and should be made general.

A chart is here submitted to illustrate for a city the size of Vancouver (240,000)—

1. A health department based partly on the system so successful in Toronto.
 2. The connection of such a health department with other services, whether metropolitan, provincial or federal, carrying out the idea of co-ordination by a Dominion Medical Service of full-time medical men.
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Editorials

CONVALESCENT SERUM

THE experience of the provincial and local health authorities in Ontario, during the summer and fall of 1929, would seem to more than justify the general use of convalescent serum in the early treatment of anterior poliomyelitis. Criticism has been levelled at the methods of the investigators in previous epidemics, on the ground of the unsatisfactory selection of the control group. This is probably just, but one has to bear in mind that it is not humanly possible to withhold treatment of even presumed value from patients suffering from a disease with which not only is associated a high mortality rate, but in which every case is a potential cripple; so that, while we may regret the inability of clinicians to present reports comparable in exactitude to those received following animal experimentation, there is no justification for not accepting the findings of those workers who have demonstrated the evident value of this method.

The use of convalescent serum in the treatment or prevention of certain major infectious diseases, has been in vogue for some years. It is one of the present methods of combating the activities of organisms prior to their bacteriological recognition. Its value in the treatment of scarlet fever was generally accepted before the discovery of the streptococcus *scarlatinae* and the resulting use of scarlet fever antitoxin, and even now, on occasion, one could think of it as having a useful place in the treatment of that disease in cases which, for example, had recently recovered from diphtheria.

The value of convalescent serum in measles has been largely demonstrated from the standpoint of prevention. Measles is still difficult, if not impossible, of control; it still annually takes a large toll among the younger age group, and it seems reasonable that this measure of prevention should be much more widely used than it is at the moment. It is possible to prevent an attack of measles in any child, if from 5-10 cc's of human serum, obtained from a recent convalescent from the disease, is administered immediately following exposure. This practice is of undoubted value in children under five, or in older children, who are already suffering from some disturbance of the upper respiratory tract. Its non-use now is inexcusable in infant homes or orphanages. Further, in view of its comparative ease of obtainment, one wonders if the suggested method of giving 5-7 cc's at a well chosen time, say

about the fifth day following exposure, in order that the child may have a modified attack, should not receive a larger measure of consideration as an accepted public health measure, from both clinicians and health authorities.

While chickenpox in the healthy child is usually mild, it assumes serious proportions often in children definitely below par, or in those who are already suffering from some other acute illness. To be able to prevent the spread of this disease in hospitals would be an undoubted boon to those charged with the administration of such institutions. The results obtained by workers in the Herman Kiefer Hospital in Detroit, are, therefore, worthy of note. Doctors Gordon and Meader report that the intra-muscular injection of 10 cc's of pooled serum obtained from convalescent adults, who had recovered from chickenpox within one to two months, and given immediately following exposure, was probably 93 per cent effective. They further state that no reaction occurred in any case, and that, while the period of immunity was not definitely known, it was undoubtedly brief. The results obtained by these workers would seem to open up a further field of investigation, and it is hoped that the treatment of mumps and whooping cough, particularly the latter, might be included in such research.

HEALTH TEACHING IN QUEBEC

THE necessity of getting before all the people in a given community or state, specific information as to how best to conserve their own or their dependents' health, is accepted as a responsibility of all governmental health organizations. Much ingenuity has been exercised in these health teaching efforts, and much that is of value has resulted. One of the most commendable efforts that has been brought to our attention in recent years is the calendar distributed this year by the Provincial Bureau of Health for Quebec.

This calendar, which supplies chronological data for the years 1930 and 1931, is attractively garbed externally, and states its purpose in simple language on the outside. Each of the twelve pages within the cover, is devoted to the pictorial presentation of some one or more of the health activities of the Department, interpreted into terms that the most unenlightened of the possible readers can understand. The desirable health practices are not glibly stated in semi-academic terms, but by apt illustration and accompanying explanatory statement, are translated into a method of presentation so simple, that even those who run may read. The background associated with page one of the calendar proper, which typifies the smooth working of the government machinery, is worthy of special mention, as are the sections devoted to child health and the prevention of tuberculosis.

The success of this health teaching venture will be watched with interest by all those charged with similar responsibilities.

Preliminary Programme

ONTARIO HEALTH OFFICERS' ASSOCIATION AND CANADIAN PUBLIC HEALTH ASSOCIATION

MAY 19TH, 20TH AND 21ST, 1930
UNIVERSITY OF TORONTO

Monday, May 19th

Ontario Health Officers' Association

Hart House Theatre, University of Toronto

Chairman—Dr. W. L. Hutton, M.O.H., Brantford, President

- 9.30 a.m.—Registration.
- 10.00 a.m.—*Urban Sanitation*—A. E. Berry, M.A.Sc., C.E., Ph.D., Director, Sanitary Engineering Division, Department of Health, Ontario,
Discussion by Dr. H. G. Murray, M.O.H., Owen Sound; Dr. H. B. Kenner, M.O.H., Stratford.
- 10.45 a.m.—*The Medical Officer of Health and the School Health Programme*, Dr. J. T. Phair, Director, Division of Child Hygiene, Department of Health, Ontario.
Discussion opened by Dr. J. W. Fraser, M.O.H., Kitchener.
- 11.30 a.m.—*Some Aspects of Communicable Disease Control*—Dr. A. L. McKay, Director, Division of Preventable Diseases, Department of Health, Ontario.

Monday, May 19th

Canadian Public Health Association

Section of Vital Statistics

Room 13, Medical Building, University of Toronto

Chairman—R. H. Coats, F.S.S., Dominion Statistician, Ottawa.

- 9.30 a.m.—*The International Conference of 1929 on the Nomenclature of the Causes of Death*—E. S. Macphail, Superintendent, Census and Vital Statistics Branch, Dominion Bureau of Statistics, Ottawa.
- 10.00 a.m.—*Vital Statistics in New Brunswick*—Dr. George G. Melvin, Chief Medical Officer, Department of Health, New Brunswick.
- 10.30 a.m.—*Registration Problems in Saskatchewan*—Stuart Muirhead, Director of Vital Statistics Division, Department of Public Health, Saskatchewan.
- 11.00 a.m.—*What Is a Still-Birth?*—Dr. Eugene Gagnon, Superintendent, Division of Vital Statistics, Department of Public Health, Montreal.

Monday, May 19th**Canadian Public Health Association****Laboratory Section**

Room 113, Medical Building, University of Toronto

Chairman—Guilford B. Reed, Ph.D., Professor of Bacteriology,
Queen's University, Kingston.

- 10.00 a.m.—*Cerebro-Spinal Meningitis in Kingston*—Wm. Hay, M.A., M.D.,
Department of Pathology, Queen's University, Kingston.
- 10.30 a.m.—*Cases of Intestinal Intoxication Attributed to Bacillus Dysenteriae*,
Sonne, M. M. Johnson, M.A., Bacteriological Research Department,
Hospital for Sick Children, Toronto.
- 11.00 a.m.—*Toxoid (Anatoxine-Ramon)*—Donald Fraser, B.A., M.D., D.P.H.,
School of Hygiene and Connaught Laboratories, University of
Toronto.

Monday, May 19th**Canadian Public Health Association and Ontario Health Officers'
Association—Combined Session,**

Hart House Theatre, University of Toronto

Chairman—Dr. A. J. Douglas, Medical Officer of Health, Winnipeg,
President, Canadian Public Health Association.

- 2.15 p.m.—*Address of Welcome*, Hon. Dr. Forbes Godfrey, Minister of
Health, Ontario.
- 2.30 p.m.—*Presidential Address*, Dr. A. J. Douglas.
- 2.45 p.m.—*Some Observations of the Recent Outbreak of Anterior Poliomyelitis
in Ottawa*—Dr. T. A. Lomer, M.O.H., Ottawa.
- 3.15 p.m.—*The Diagnosis and Treatment of Anterior Poliomyelitis*—Dr.
George A. Campbell, Ottawa.
- 3.45 p.m.—*The Grancher System in the Control of Infant Tuberculosis in
Quebec*—Emile Nadeau, M.D., D.P.H., Assistant Director, Pro-
vincial Bureau of Health, Quebec.

Tuesday, May 20th**Ontario Health Officers' Association**

Hart House Theatre, University of Toronto

Chairman—Dr. W. L. Hutton, M.O.H., Brantford.

- 9.30 a.m.—*Recreational Sanitation*—E. W. Johnson, B.A.Sc., and A. T.
Byram, B.A.Sc., Sanitary Engineering Division, Department of
Health, Ontario.

Discussion led by Dr. R. E. Joyce, M.O.H., Port Carling;
Dr. J. D. MacDonald, M.O.H., Huntsville.

10.15 a.m.—*Child Hygiene in Ontario—Its Present Status*—Dr. J. T. Phair, Director, Division of Child Hygiene, Department of Health, Ontario.

11.00 a.m.—*A Rural Typhoid Fever Outbreak*—Dr. N. H. Sutton, D.O.H., Peterboro.

Discussion opened by Dr. W. E. George, D.O.H., North Bay.

Tuesday, May 20th

Canadian Public Health Association

Public Health Nursing Section

Room 138, Medical Building, University of Toronto

Chairman—Miss Ruby M. Hamilton, Nursing Supervisor, Ontario Division, Canadian Red Cross Society.

9.30 a.m.—*Modern Trends in Nutrition*—F. F. Tisdall, M.D., Hospital for Sick Children, Toronto.

10.15 a.m.—*Nutrition and Pregnancy*—Dr. K. C. McIlwraith, Associate Professor of Obstetrics, University of Toronto.

11.00 a.m.—*Nutrition in the Home*—Miss Lexa Denne, Director, Visiting Housekeepers' Association, Toronto.

Discussion, Miss E. M. M. Buckbee, Ontario Red Cross, Hamilton, Ont.

Tuesday, May 20th

Canadian Public Health Association

Laboratory Section

Room 113, Medical Building, University of Toronto

Chairman—G. B. Reed, Ph.D., Professor of Bacteriology, Queen's University, Kingston.

9.30 a.m.—*Laboratory Diagnosis of Lead Poisoning*—A. R. Riddell, B.A., M.B., D.P.H., Division of Industrial Hygiene, Department of Health, Ontario.

10.00 a.m.—*Dissociation of the Tubercle Bacilli*—Guilford B. Reed, Ph.D., Professor of Bacteriology, Queen's University, Kingston.

10.30 a.m.—*Recent Advances in the Laboratory Diagnosis and Specific Treatment of Pneumonia*—Dr. M. H. Brown, Connaught Laboratories, University of Toronto.

Tuesday, May 20th

Canadian Public Health Association

Section of Vital Statistics

Room 13, Medical Building, University of Toronto

Chairman—R. H. Coats, F.S.S., Dominion Statistician, Ottawa.

9.30 a.m.—*The Problem of Late Registration of Births*—S. J. Manchester, Director of the Division of Vital Statistics, Department of Health, Ontario.

- 10.00 a.m.—*History of Vital Statistics in Quebec*—Dr. Paul Parrot, Statistician, Provincial Bureau of Health, Quebec.
- 10.30 a.m.—*Statistics of Maternal Mortality*—Dr. Helen MacMurchy, Chief, Division of Child Welfare, Department of National Health, Canada.
- 11.00 a.m.—*Racial Origins in Relation to Public Health Activities* (lantern slides), Dr. F. W. Jackson, Director, Division of Communicable Diseases, Department Health, Winnipeg, Manitoba.
- 11.30 a.m.—*Classification of Causes of Death in a Municipal Health Department*—T. E. Ashton, Chief Statistician, Division of Vital Statistics, Department of Public Health, Toronto.

Tuesday, May 20th

Canadian Public Health Association and Ontario Health Officers' Association

- 12.30 p.m.—Members will be guests of the Department of Health of Ontario at Luncheon in Great Hall, Hart House, University of Toronto.

Tuesday, May 20th

Ontario Health Officers' Association and Canadian Public Health Association—Combined Session

Hart House Theatre, University of Toronto

Chairman—Dr. W. L. Hutton, President, Ontario Health Officers' Association.

- 2.30 p.m.—*Presidential Address*, Dr. W. L. Hutton, Brantford.
- 3.00 p.m.—*Rural School Hygiene*—Dr. Taliaferro Clark, United States Public Health Service, Washington, U.S.A.
- [3.45 p.m.—*Why Vital Statistics?*—R. H. Coats, F.S.S., Dominion Statistician, Ottawa, Chairman, Section of Vital Statistics, Canadian Public Health Association.
- 4.15 p.m.—*Amentia—An Economic, Educational, Social and Public Health Problem*—Dr. B. T. McGhie, Director, Ontario Hospital, Orillia.

Tuesday, May 20th

Canadian Public Health Association and Ontario Health Officers' Association

Reception

Hygeia Hall, 40 Elm Street.

- 8.30 p.m.—Members will be guests of the Canadian Social Hygiene Council.

Wednesday, May 21st**Ontario Health Officers' Association**

Hart House Theatre, University of Toronto

Chairman—Dr. W. L. Hutton, M.O.H., Brantford.

- 9.30 a.m.—Recent Health Legislation in Ontario—Dr. W. J. Bell, Deputy Minister of Health.
10.30 a.m.—Question Drawer.
11.30 a.m.—Business meeting and election of officers.

Wednesday, May 21st**Canadian Public Health Association****Section on Vital Statistics**

Room 13 Medical Building, University of Toronto

Chairman—R. H. Coats, F.S.S., Dominion Statistician, Ottawa.

- 9.30 a.m.—*Registration of Resident and Non-Resident Deaths*—Dr. Grant Fleming, Director, Department of Public Health and Preventive Medicine, McGill University, Montreal.
10.00 a.m.—*Interpretation of Rates in Canadian Vital Statistics*—W. R. Tracey, Division of Vital Statistics, Canada.
10.30 a.m.—*The Trend of Diabetic Deaths in Ontario*—Miss M. A. Ross, M.A., School of Hygiene, University of Toronto.
11.00 a.m.—*Address*—H. B. French, M.A., Department of Vital Statistics, British Columbia.

Wednesday, May 21st**Canadian Public Health Association****Public Health Nursing Section**

Room 138, Medical Building, University of Toronto

Chairman—Miss Ruby M. Hamilton, Nursing Supervisor, Ontario Division, Canadian Red Cross Society

- 9.30 a.m.—*Work of the Travelling Tuberculosis Clinic*—Mrs. H. C. Bricker, Diagnostic Chest Clinic, Division of Preventable Diseases, Department of Health, Ontario.
10.15 a.m.—*The Rôle of the Public Health Nurse in the Control of Tuberculosis*—Dr. R. E. Wodehouse, Secretary, Canadian Tuberculosis Association.

- 11.00 a.m.—*Preventorium Care*—Miss H. Fraser, Superintendent, Independent Order Daughters of the Empire Preventorium, Toronto.
 Discussion, Miss A. M. Forrest, Lady Superintendent, Alexandra Sanitarium, London, Ontario.
 Miss M. Cameron, Superintendent of Nurses, The Orchard, Mountain Sanitarium, Hamilton, Ontario.

Wednesday, May 21st

Canadian Public Health Association

General Meeting

Room 113, Medical Building, University of Toronto

11.30 a.m.—

Reports of Standing Committees.
Report of Secretary.
Report of Treasurer.

Report of Secretary, Editorial Board.
Election of Officers.
General Business.

Canadian Social Hygiene Council

ANNUAL MEETING, APRIL 30 TO MAY 2, 1930

SUBJECTS of challenging interest will make up the programme, just completed, of the forthcoming eleventh annual meeting of the Canadian Social Hygiene Council, which will be held in the Royal York Hotel, Toronto, from April 30 to May 2, inclusive.

Henry E. Spencer, M.P., Battle River, Alta., who made the recent successful motion that the Government consider subsidizing county health units, will speak on "Health Problems in Canada" at the luncheon meeting on Wednesday, April 30. The Section on Health Insurance will occupy the afternoon, under the chairmanship of Dr. Gordon Jackson,

Medical Officer of Health of the City of Toronto.

Thursday's luncheon speaker will be Dr. W. J. Bell, Deputy Minister of Health for Ontario, his subject "Co-operation". The afternoon will be given over to addresses on the various phases of periodic health examination under the chairmanship of Dr. J. T. Phair, Director, Division of Child Hygiene, Department of Health, Ontario.

The Section on Venereal Diseases will occupy the convention's attention on Friday afternoon. Dr. J. J. Heagerty of Ottawa, Chief Executive Assistant, Dominion Department of Health, will preside, and there will be five papers.

NUTRITION

LENA DENNE, B.A., and E. W. McHENRY, Ph.D.

THE RELATION OF DIET TO DENTAL PROBLEMS

BY

JESSIE M. RIDOUT, M.A.

Department of Physiological Hygiene, University of Toronto.

DURING the past few years, the attention of a number of scientists has been directed to the influence which various types of diet have on general health. One of the results of these investigations has been the clear demonstration that diet plays a dominant rôle in the structure and resistance of the teeth. The evidence of some workers, particularly that of Mrs. Mellanby has suggested that there is a definite relationship between hypoplasia and dental caries, although this has not been universally accepted.

Dental caries may be defined as a chemical decomposition and subsequent decay of the affected parts of a tooth. Hypoplasia means incomplete and defective formation of a tooth, in which there are areas of soft tooth structure, pits and grooves in the hardened enamel, or even the entire absence of enamel in some places. Microscopically hypoplastic teeth very often show uncalcified areas in the dentine which are called interglobular spaces. A normal tooth may therefore be defined as one which is well calcified, which has smooth enamel, very little pigmentation and is free from interglobular spaces in the dentine.

It is now well recognized that vitamins are essential for the growth and proper nutritive economy of the

animal body and their discovery has resulted in the accumulation of many new facts which affect dental problems. The structure and composition of teeth can be affected by variations in the diet with respect to the amount of calcium and phosphorus, cereals, and the vitamins—particularly vitamin D, which is anti-rachitic. Vitamin D seems to control the calcifying process. Cereals, particularly oatmeal, interfere with calcification and the minimum amount of the inorganic salts of calcium and phosphorous necessary for calcification depends on the amounts of vitamin D and of cereals in the diet. If the diet has a great deal of cereal which contains an anti-calcifying substance, the addition of either calcium in the form of carbonate or vitamin D assists in the calcifying process. Additional vitamin D may be given by increasing the supply of the natural foods, such as cod liver oil, egg yolk, and milk, or by adding small quantities of irradiated ergosterol. Another factor affecting tooth formation is ultraviolet radiations which have the same effect as the addition of vitamin D. These may be obtained from a mercury-vapour lamp or from direct sunlight at certain times of the year.

In order to demonstrate the calcifying effect of vitamin D, Mrs. Mel-

lanby carried out an investigation, using the domestic dog as the experimental animal. The dogs were given a basal diet which was sufficient insofar as protein, fat, carbohydrate and inorganic salts (including calcium and phosphorus) were concerned. The vitamin content could be regulated as desired. Yeast provided vitamins B₁ and B₂. Orange and lemon juice provided C, while variations in the fat of the diet determined the amounts of both A and D since these vitamins are so closely associated in their distribution. When fats such as olive oil, coconut oil and linseed oil, which are low in both vitamins A and D, were used, cabbage was added to supply sufficient vitamin A. This diet in which vitamin D alone was lacking caused defective structure of the teeth. If cod liver oil, even in small quantities, was substituted for the fat, perfect calcification occurred. These results suggested that calcification of teeth is primarily dependent on the vitamin D content of the diet. Thus, egg yolk, which is very rich in vitamin D, stimulates calcification, while egg white which is deficient in this respect has no effect. Whole milk, if given in sufficient quantities, is beneficial. Butter, although not so good as whole milk, is more effective when it is given with the milk, which is rich in calcium. This same effect may be shown by giving additional calcium with the butter.

Cereals have a tendency to interfere with the calcification of teeth. When a large amount of cereal is included in the diet if good calcification is to be secured, the anti-calcifying effect must be offset by giving more vitamin

D. Among the cereals tested were maize, oatmeal, whole meal flour and rice white flour; of these, oatmeal was found to be the worst offender.

The effect of ultraviolet irradiation is demonstrated by irradiating foods which were previously found to be inactive with respect to bone and tooth calcification. For instance, if olive oil, which is inactive, is exposed to the rays from a mercury-vapour lamp, it acquires anti-rachitic properties. The calcifying properties of butter are also increased by this treatment. Cereals, which are antagonistic to good calcification, lose this power of anti-calcification after irradiation and then tend to promote the formation of good teeth. It has been suggested that sufficient vitamin is formed from the inactive ergosterol present in the cereal, to completely neutralize the toxic factor. Animals which are exposed to these radiations also show improved calcification, both in their bones and teeth.

A well balanced diet is essential not only during the developmental period but after eruption and complete calcification of the tooth, as the resistance, not only to caries but to any harmful external stimulus, is determined by the nutritional state of the body at that time. If the diet contains an adequate amount of vitamin D, the secondary dentine which is formed as a protection is well calcified. On the other hand, if the diet is deficient in this vitamin, the secondary dentine is very poorly calcified. In the light of our present knowledge, the better calcification of teeth which occurs when an adequate amount of vitamin D is present, either in the form of irra-

diated ergosterol or in our natural foods, may be explained as due to the improvement in absorption and retention of calcium.

One of the signs of scurvy, which is caused by a deficiency of vitamin C in the diet, is hemorrhage in various parts of the body, including the gums, where it may cause a loosening of the teeth. The original work on the effect of vitamin C deficiency on teeth was performed on guinea pigs by Howe and others. More recently, Hanke of Chicago, has studied the effect on human teeth of diets deficient in vitamin C. His results show that by means of a diet that contains an abundance of vitamin C, solid gum tissue is produced and caries is arrested.

Mrs. Mellanby has classified defects in the structure of teeth under three headings: slight hypoplasia, hypoplasia and severe hypoplasia. In the examination of more than 1,000 deciduous and many permanent teeth obtained from dental offices and clinics in England, she observed that only 14.4 per cent were perfectly normal. Of the remainder, 21.4 per cent were slightly hypoplastic, and 64.2 per cent were hypoplastic and severely hypoplastic. Among the teeth which were normal or nearly normal in structure, only 27 per cent had carious cavities as compared with 85 per cent in the hypoplastic groups. Nearly 90 per cent of the teeth examined seemed to support the general hypothesis that there is a definite relationship between structure of teeth and caries. The teeth that were obtained from dental offices were found to be less defective in structure than those from the dental clinics. It is interesting to note that of the teeth

examined, the incisors were the best calcified and had the lowest incidence of caries, while in the group of second molars, which were the worst calcified, caries was found to be the most prevalent.

Apart from these direct changes which are initiated in the structure of teeth by the diet, the physical and chemical properties of food have been shown to affect the production of caries. If the food is not sufficiently masticated or if the diet consists chiefly of soft foods, the jaws do not properly develop through lack of exercise and this results in overcrowding of the teeth. The malposition of the teeth makes it difficult to cleanse all the surfaces, and thus production of acid is caused by bacterial decomposition of food which may adhere to the crevices of the teeth. The acid that is formed in this way dissolves the inorganic constituents on the oral surface of the tooth and caries may be initiated. The fibrous foods such as fruits and raw vegetables, in addition to their stimulating effect upon the process of mastication, have a cleansing effect by increasing the secretion of saliva. Carbohydrate foods favour the production of acid in the mouth, and in this way may increase the incidence of caries.

In conclusion we may say that the recent work on the effect of diet in relation to teeth has demonstrated that the teeth are affected by the same factors as the skeletal system. If this work results in a realization that the teeth should be regarded as integral parts of the body as a whole and not, as has been the case in the past, as isolated structures, a valuable advance will have been made.

PUBLIC HEALTH NURSING

RUBY M. SIMPSON, REG.N., AND FLORENCE H. M. EMORY, REG.N.

SOME IMPRESSIONS OF A YEAR'S STUDY IN ENGLAND

CORY TAYLOR, REG.N.

IMPRESSIONS! What a flood of incidents rush to mind—the daily fascination of London life; the wretched, ragged old man in White-chapel pausing to stroke a scrawny lost kitten; Hyde Park orators; London on the night of a general election; or that death-like two minutes' silence at the Cenotaph on Armistice Day, when only stifled sighs or the flapping wings of a bird high overhead break the stillness; or little children, rosy cheeked, though from dark slums, finding happiness and health in the Rachel McMillan Nursery School and gardens. See also that beautiful silver bowl filled with fresh carnations on the bare prison dining table of a Borstal Institution, the Governor's weekly reward for good conduct to the most deserving group. The mind is soon flooded with such incidents.

Now we are being welcomed to our new home, 15 Manchester Square, a lovely old town residence in West London, across the Square from the priceless Wallace Collection. It is a residence combining delightfully the international and yet the English atmosphere. Canada is greeted by new friends from sixteen countries, Japan, Ceylon, Germany, Siam, Italy, Spain and many others. Twenty-four nurses are gathered from many parts of the world to live and study together for a year, to discuss common problems and to develop international friendships and understanding. In case you do

not know, the International Course for Public Health Nurses (and later for Hospital Administrators) was commenced in 1920, as part of the peace-time programme of the League of Red Cross Societies. One hundred and sixty-four students from forty-one countries have already secured the coveted certificate. Lectures are given at Bedford College, University of London (if only we had time to say more of Bedford!), also at the College of Nursing, while practical work is obtained with public health departments and hospitals not only in London, but in various parts of England, Scotland, Denmark, France and Belgium.

Outside the lecture room, weekly excursions provide a wealth of material for impressions, good, bad and indifferent! Come along and see with us old and new housing estates, factories, schools, prisons, villages and workshops for the tuberculous, cleansing centres, and famous old hospitals. The list can be multiplied almost indefinitely.

In the public health field, who would not be impressed by the widespread influence of England's Ministry of Health; by the tremendous amount of work accomplished in the past and present by voluntary workers; by the growing popularity of health centres (particularly with a lady doctor in charge) and the cutting in half of the infant mortality rate in less than

twenty-five years. Much is being attempted: the lowering of the tragic maternal mortality figures, the close supervision of well trained midwives, health supervision of pre-school as well as school children, provision of nurseries, convalescent homes and numerous special schools. In many centres short health talks are given to waiting mothers, while sewing classes and afternoon tea are extremely popular features. Huge housing schemes are surely honest attempts to better the lives of the masses, and the holding of local Health Weeks and the formation of such groups as the League of Health, and the National Baby Week Council would indicate that increasing attention is being given to general health publicity. Health is being made popular!

What impressions we received and what lessons we learnt as we entered narrow courts or mounted innumerable steps, to find little children living—no, not living, just existing—with many others amid indescribable surroundings, stunted in mind, soul

and body. Little wonder that men and women have courageously stepped forth imploring the government, the churches, and society at large, to help give every man a fighting chance, to give children their rightful heritage, sunshine for growth, and gardens for play. For encouragement, however, compare conditions of 1900 with those of to-day. What credit is due those who, with such foresight and devotion, have pioneered social and educational reforms or health activities!

For us, Bedford College days have passed, but a golden web of friendship and understanding joins together former students now working in northern or far southern lands, and under tropical skies. As for England, with her shadows and sunshine, her slums, but also her fields filled in spring with swaying daffodils and bluebells, we have grown to love her, and believe she has many worth-while lessons to teach her Dominions and colonies, and other lands, if they will but pause and listen.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA*
BY PROVINCES—FEBRUARY, 1930

Disease	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria....	6	42	19	168	218	55	54	18	43
Scarlet Fever..	—	74	50	478	905	77	114	195	52
Measles.....	—	14	8	731	1,605	41	91	4	163
Whooping Cough.....	—	—	—	487	380	166	90	22	135
German Measles.....	—	—	—	42	288	†	14	1	28
Mumps.....	—	1	53	657	102	146	47	109	154
Smallpox.....	—	—	—	—	77	5	107	17	13
Cerebrospinal Meningitis..	—	2	1	4	4	3	—	4	1
Anterior Poliomyelitis	—	—	—	3	—	—	2	4	1
Typhoid Fever	—	1	2	86	27	6	—	1	8

*Data furnished by the Dominion Bureau of Statistics, Ottawa.

†Not reportable.

CORRESPONDENCE

RAVENEL'S CONTRIBUTIONS TO BOVINE TUBERCULOSIS INFECTIONS IN MAN

THE EDITOR:

In my paper entitled the "Relative frequency of Tuberculosis of Bovine Origin in Europe and America" which appeared in two recent numbers of the Journal I attempted a historical survey of the question of bovine infection in man. The survey of the literature was in no sense complete, only the milestones in the path of progress being emphasized. One piece of work was omitted which I feel should have received attention, and that is the contribution to the subject made by Professor Mazyck Ravenel of the University of Missouri, Columbia, at the time of the British Congress on Tuberculosis in 1901. Professor Ravenel at one of the general meetings following Koch's address (p. 91 of Vol I of Transactions) brought forward three instances, fully substantiated and investigated by himself, of infection with the bovine bacillus in man. In two of the cases the infection was obtained directly from the cow, in the third a pure culture of the bovine bacillus was the source of infection. Although examples of veterinary surgeons infected from cattle had been cited before in literature this was the first occasion in which infection of this kind was put to the proof according to the postulates laid down by Koch himself. Professor Ravenel subsequently, in the *Lancet*, August 10th and 27th, 1901, gave details of his work done at the State Live Stock Sanitary Board of Pennsylvania. As the results of this work he confirmed one of Koch's main theses namely,

that it is exceedingly difficult to produce tuberculosis in cattle with tubercle bacilli of human origin. He recognized the relative difficulty of growing germs of bovine origin on artificial media, a point afterwards emphasized by the British Royal Commission. He concluded that cultures from human and bovine sources differ widely in pathogenic power, the bovine bacillus being very much more active than the human for all the species of experimental animal tested with the exception of swine which were highly susceptible to both types, and he drew the following inference: "It is a fair assumption from the evidence at hand in the absence of evidence to the contrary, that the bovine tubercle bacillus has a high degree of pathogenic power for man also, which is especially manifest in the early years of life." He followed this up by further work published in the Transactions of the Pathological Society of Philadelphia, May, 1902, in which he described the isolation of pure cultures from children who died of tuberculosis at the Children's Hospital, Philadelphia, the cultures being pathogenic in calves and in a cow. These no doubt were among the instances of fatal bovine infection in man so unwarrantably brushed aside by Koch in his address at the Washington International Conference in 1908.

James Miller.

*Professor of Pathology and Director
Richardson Laboratory, Queen's University,
Kingston.*
Feb. 20, 1930.

COUNTY HEALTH UNITS

THE EDITOR:

IT is gratifying to observe that the proposal consistently advocated by the writer for the last ten years, viz: that the Dominion Government should subsidize the establishment and permanent maintenance of whole-time health units in the provinces to the extent of one-third of their cost, last month (March 3rd) received the unanimous support of the House of Commons in the passing of the following resolution, viz.—

"That in the opinion of this House, the Government should take into consideration the advisability of making grants to the Provinces equal to one-third the cost of establishing and to cover permanently such full-time health units as may be organized."

The Federal Government under the terms of the British North America Act is definitely committed to the support of health all over Canada. At Confederation those matters assigned to the jurisdiction of the provinces were definitely mentioned; those left undesignated fell within the jurisdiction of the Dominion. Health, not being mentioned at all in the Act, automatically became the subject of administration by the Dominion, and should receive federal support, since the matter of local administration can best be operated by local agencies. This principle is well sustained in law; it has the support of eminent legal opinion. Whole-time local health administration, so greatly needed all over the country, is the earliest and most effective step in general public health advancement. The local units

should embrace larger areas than the municipality except in the case of larger centres of population. In the rural areas the new health units might properly include a county or half a county, and the necessary funds should be the joint contribution of the three elements of government involved, viz., Dominion, provincial and municipal, or that of the new local area.

When this is accomplished a fine forward step in the protection of the health of our people will have been gained.

JOHN W. S. McCULLOUGH,
M.D., D.P.H.,
Chief Inspector of Health.
Ontario.

March 4th, 1930.

THE USE OF THE AGAR PLATE
COUNT AS THE STANDARD

THE EDITOR:

IN a recent paper dealing with the value of the reductase test in milk analysis, appearing under the Laboratory Section of the JOURNAL, Vol. XX, p, 413, the results obtained by this test and by the Breed count are compared with those of the agar plate count. The conclusions are that "the reductase test offers advantages in making a rapid analysis of milk samples having a high bacterial count", that "these tests should always be confirmed by an agar plate count" and that "the direct microscopic count is subject to wide variations". It will be observed that the agar plate count is taken as being the most accurate method of determining the bacterial content of the milk, and

where the other methods fail to yield results in close agreement with the plate count they are considered to be less accurate. However, Ellenberger and his co-workers¹ have shown that "the methylene blue reduction time correlates much better with the keeping quality of the milk than does the agar plate count", and that "the methylene blue reduction test shows much less (one-seventh as much) variability between check, or duplicate, tests than does the agar plate method". Surely the contributor of that article cannot be in earnest when he recommends that the reductase test should always be *confirmed* by a method showing seven times as much variability!

C. K. Johns.

¹Ellenberger, H.B., Bond, M.C., Robertson, A.H., and Moody, R.I. Vermont Agr. Expt. Sta. Bull. 264, 1927.

The above letter was submitted to Dr. A. L. McNabb, who contributed

the article referred to. He has submitted the following answer:

The purpose of milk analyses is to determine the care which has been exercised in the production and handling of milk. Authorities have recognized that the reductase test is not a quantitative one. There is a tendency on the part of some to consider that keeping qualities are the only factors worthy of consideration in a milk test. The keeping quality is readily gauged by the reductase test—a qualitative test. The plate count, however, gives other information and for this reason, there is no hesitation in re-affirming the statement in the article referred to, namely, that whatever tests are made on milk they should be supplemented by the agar plate count in order to properly interpret the quality (not only the *keeping* quality) of the supply.

A. L. McNABB,

*Director of Laboratories,
Department of Health, Ontario.*

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

Prince Edward Island

DURING the year 1929, approximately \$100,000, was raised to build a Provincial Sanatorium with bed accommodation for forty patients; of this, \$30,000 was an appropriation by the Provincial Government and \$76,000 of which \$44,000 is already paid, was pledged during a campaign carried on during the month of September. The Province has undertaken to provide \$12,000 annually towards the maintenance of this hospital which

it is expected will be ready for occupation before 1931.

A vaccination campaign was carried out during the autumn of 1929 which has reduced the unvaccinated school child population of the rural districts from 85 per cent to 10 per cent. There are therefore 90 per cent of the rural school children successfully vaccinated against smallpox.

During the last calendar year, a section was added to the Public School

Act requiring that all first year students entering the Prince of Wales College submit themselves to vaccination against smallpox and examination for tuberculosis and other communicable diseases.

Beginning January last a diphtheria immunization campaign was initiated which is to be extended to the rural sections of the Province during the spring. So far 2,400 individuals have been inoculated, of which number 1700 were in Charlottetown and of these 300 were in the pre-school age group.

Nova Scotia

DR. T. IVES BYRNE has been appointed Provincial Health Officer and Deputy Registrar of the Province of Nova Scotia, *vice* Dr. G. A. MacIntosh who has resumed his duties as Resident Physician at the Victoria General Hospital, Halifax.

Miss L. Clements, Reg.N., has been appointed health nurse for the town and municipality of Yarmouth.

On the 19th of February last, Premier Rhodes formally opened the new wing of the Payzant Memorial Hospital at Windsor, N. S. The hospital which has served this district since 1905 now meets the standard requirements of the American College of Surgeons.

New Brunswick

DR. H. A. FARRIS, Superintendent of the Saint John Tuberculosis Hospital since its opening in 1915, has resigned owing to ill-health, to the profound regret of all interest-

ed. It is his intention to spend the next year in Europe for recuperation and special study. The resignation will take effect with the appointment of a successor. Dr. Farris has been most active at all times in keeping before the public the great health problems of tuberculosis, as well as the curative features with which his hospital associations brought him into such intimate contact.

Dr. Busby of Ottawa has been appointed medical assistant at the Saint John Tuberculosis Hospital.

Arthur J. Nesbitt of Montreal, formerly of Saint John, on February 1st opened the Nesbitt Memorial Hospital for Children as a unit of the Saint John Tuberculosis Hospital. This new structure, which was originally planned for one storey, is, by Mr. Nesbitt's further generosity, a modern two-storey building accommodating 52 patients with a large school room at the west end and a play room at the north end. The second floor is arranged to provide, in addition to bed accommodation, terraces that serve the function of sun porches, and other modern arrangements for diet kitchen, dining room, isolation wards, and ultra-violet ray equipment.

Ontario

DR. W. L. HUTTON, Medical Officer of Health of Brantford, informs us that the item dealing with his annual report for 1929, appearing in this section of the February issue is in error. The situation with respect to diphtheria and diphtheria immunization in the city of Brantford is briefly as follows:

Immunization against diphtheria began in 1922 and at the end of 1929, 8681 school children had been so treated by the use of toxoid. In 1920 and 1921 before immunization began, there was a total of 185 cases with 14 deaths from diphtheria; from 1922 to 1929 inclusive, there was a total of 9 deaths from this cause out of a total of 142 reported cases. Of the nine persons dying as a result of diphtheria in the period 1922-1929, none had received toxoid; and of the 142 cases, two had received three doses of toxoid; three had received two doses; and one had received a single dose.

We have to thank Dr. Hutton for correcting our previous data which were derived from an unofficial source.

Professor J. G. FitzGerald of the School of Hygiene, University of Toronto, has made an uncomplicated recovery from pneumonia which developed during the latter part of February.

Dr. R. D. Defries, Associate Director of the School of Hygiene in the University of Toronto, is at present in England.

Manitoba

THE municipality of St. James, a suburb of Winnipeg, with a population of 12,700, has voted in favour of the establishment of a full-time health district, which it is anticipated will be established shortly. The annual budget provided for this purpose is \$10,000 and includes a full-time health officer, sanitary inspector, nurse and clerk. This marks a for-

ward step in public health work in this province.

The Annual Report of the Department of Health and Public Welfare of Manitoba for 1929 has recently been "tabled". Nearly 7,000 children in some fifteen municipalities during the past year have been immunized against diphtheria. Incidentally it is of interest to note that the attack rate per 100,000 population for 1929 was 112, the lowest in five years. The highest rate was 169 in 1926 and the next lowest was 144 in 1927.

A secondary epidemic of poliomyelitis is noted involving fifty-five cases of a severe type, affecting chiefly those areas which escaped the 1928 outbreak.

The Department of Health and Public Welfare has, from January last, provided membership in the Canadian Public Health Association for all health officers in the province.

British Columbia

THE University of British Columbia through the University Health Service has provided, since the beginning, compulsory physical examination of all entrants to its courses as well as a vaccination service and the supervision of infectious diseases. Since 1927 first aid treatment has been afforded to all students and employees, and provision has been made for the attendance at classes of non-immunes who have been exposed to infection provided these subject themselves to daily (or twice in some instances) examination during the incubation period of the particular disease to which exposure

has occurred. The examination may be conducted by the attending physician, a public health nurse or the personnel of the University Health Service.

The Annual Institute for Public Health Nurses this year was held March 13th, 14th and 15th in the lecture room of the Vancouver General Hospital under the auspices of the Provincial Board of Health and the Department of Nursing and Health of the University of British Columbia. A special feature of the course was a series of lectures dealing with various phases of maternal care. Miss Anita M. Jones, Assistant Director of the Maternity Centre Association of New York, conducted the Maternity Institute.

A series of extra-mural lectures

under the University Extension of the University of British Columbia has been prepared by the Department of Nursing and Health, outlining the functions of the public health nurse, for presentation before high school students, private nursing groups and other similarly interested bodies.

The British Columbian representative at the National Research Council Committee meetings in Ottawa during February last was Dr. H. W. Hill of the University of British Columbia. With the inclusion of other outstanding medical representatives, such as Dr. J. G. FitzGerald, Dr. Oskar Klotz, of Toronto, and Dr. N. MacL. Harris of Ottawa, on the Animal Diseases Committee, our correspondent notes that the lines dividing the study of medicine in man and animals are gradually disappearing.

OBITUARY

Dr. Isidore Gallant

PRINCE EDWARD ISLAND lost its oldest active medical practitioner in the sudden death on February the 10th of Dr. Isidore Gallant at his home at Bloomfield in his seventy-ninth year.

The late physician was born at Oyster Bed Bridge, July 25th, 1851, the sixth child of a family of sixteen and a descendant through both his mother and father of the very early settlers at Rustico. Dr. Gallant's early education was obtained locally and at the age of fourteen he was sent to St. Thomas' College at Chatham, N.B. Like so many other members

of the profession he was for a short time engaged in school-teaching. In 1871 he attended St. Dunstan's College, from which he proceeded to the study of pharmacy at Charlottetown. After spending a year at Dalhousie University he entered the Medical School of the University of Pennsylvania from which he graduated with honours in 1877, being the first Acadian of the Province to enter the medical profession. Shortly after graduation Dr. Gallant was house physician in St. Mary's Hospital in Philadelphia. He returned to the Island in 1880, where he was actively engaged in practice until his death.

BOOK REVIEWS

D. T. FRASER, B.A., M.B., D.P.H. and R. R. McCLENAHAN, B.A., M.B., D.P.H.

Acute Infectious Diseases. By Schamberg and Kolmer. Lea and Febiger, Publishers, Philadelphia, 1928. Second edition, 861 pages, illustrated with 161 engravings and 27 full-page plates. Price \$10.00.

In the second edition of "Acute Infectious Diseases", a revision and extension of the former edition, the following subjects are considered — smallpox, vaccinia, chickenpox, scarlet fever, measles, rubella, the "fourth disease", erythema infectiosum, typhus fever, diphtheria, serum anaphylaxis, Vincent's angina, mumps, whooping cough, erysipelas and cerebro-spinal meningitis. The selection of "infectious diseases" is, thus, purely an arbitrary one and is obviously not intended to include all infectious diseases. Will such common ones as typhoid fever, common colds, and pneumonia, be included in a later edition? (In the text the author uses the term "communicable diseases". One wonders why this term is not used in the title.)

The material is presented in 845 pages in 22 chapters. An introduction of 9 pages is devoted to a discussion of "Infection and Immunity in Relation to the Acute Infectious Diseases"; approximately 1/3 of the book is devoted to the subjects of vaccinia, vaccination and smallpox; and another 1/3 to the subjects of scarlet fever and diphtheria together. Each chapter is divided by headings and sub-headings which serve to emphasize the various phases considered.

The subject matter is a comprehensive review of the literature, including the contributions of the authors, with references conveniently placed at the bottom of the page. It is as a reference book, therefore, that this edition is most useful, and for that purpose it is well adapted.

With the material thus presented for reference purposes, the reviewer can understand why, under the Prognosis of Diphtheria, no mention is made of the factor of early serum treatment; one finds mention of it 36 pages further on under the sub-heading of Serum Therapy (diphtheria), after the presentation of Local and Constitutional Treatment; and under Diagnosis of Diphtheria one reads through four pages before coming to Bacteriological Diagnosis, under which sub-heading the taking of a swab is first mentioned.

Some views are expressed and statements included with which it is difficult not to disagree. For instance, place is found for oral and rectal administration of antitoxin and a half page is devoted to the method. "The disadvantage of the method (intra-dermal vaccination against smallpox) is the absence or very small size of the scars as proof of vaccination. . ." If that were the only disadvantage, vaccinators would be quick to use the method. Hunt and Falk are given credit for successfully vaccinating rabbits with vaccine virus heated to 60° for one hour. Such a finding, so diametrically opposed to that of all

other investigators, probably should receive some corroboration before its inclusion in a text book. These few examples may serve to show why, in the opinion of the reviewer, the book is much more suitable as a reference book for those who have sufficient knowledge of the various subjects to use discrimination in their selection of information, than it is as a text book for students. True, the authors as a rule, add their own experiences and conclusions, and the conclusions of men of such experience are always valuable, but these are too often modestly hidden under a mass of less valuable material.

The book is exceptionally complete with excellent illustrations, well reproduced. The printing is clear and easily read. Italics are used for emphasis and there is an admirable absence of typographical errors.

What has been said in criticism of the book for students becomes commendation of it as a reference book for the shelf of physicians, particularly public health officials who must know not only the accepted facts, but also the background,—and this is to be found here.

Public Health and Hygiene. Edited by William Hallock Park, M.D. Lea and Febiger, Philadelphia, Publishers, 1928. Second edition, 880 pages, illustrated with 123 engravings. Price \$9.00.

The general plan of modern text books written upon public health and hygiene reflects very definitely the change in attitude toward these subjects. The increase in scientific knowledge of the means of prevention of

disease has led to a wider division of the subject, so that highly specialized public health administrators are required for the development of different departments. Dr. Park has called upon some twenty or more contributors, each qualified to write with authority upon problems in his own special field. In general, the subjects of infection and immunity have been written by Park, also those chapters dealing with the control of communicable diseases. The known facts are clearly and succinctly outlined and are an expression of an authoritative and critical opinion by one whose experience is enviably great. Approximately four-fifths of the book is devoted to a consideration of special subjects as child, industrial, tropical, mental and military hygiene, the various phases of sanitation, ventilation, food, vitamins, vital statistics and epidemiology.

Specific references to the literature are few, which fact has certain advantages in point of view of facility in reading and conservation of print. No mention of convalescent serum from cases of poliomyelitis was noted, which, though perhaps in the strict sense belonging to treatment, should be emphasized on the basis of prevention of both death and disability. On page 158 there is a typographical error in the spelling of Fermi-Semple and of Höyges.

The book is written for medical officers, public health nurses, physicians and medical students, and not for specialists in public health work. One may unhesitatingly recommend this book as an authoritative, readable and thoroughly modern text.

D.T.F.

CURRENT HEALTH LITERATURE

D. T. FRASER, B.A., M.B., D.P.H.

Bacteriology of the Blood and Joints in Rheumatic Fever. *Cecil, Nicholls, and Stainsby. Jour. Exp. Med., Vol. 50, No. 5, Nov. 1929.*

The authors in the initial paragraph state: "Although 30 years have elapsed since a streptococcus was first reported in the lesions of rheumatic fever, the etiology of this disease still remains in doubt. It is true, of course, that the streptococcus is now looked upon by many as the exciting agent, but final acceptance of the streptococcal theory is far from being universal."

In reading the paper, one is struck with the fact that the work here recorded was carried out with great thoroughness and painstaking care,—two considerations not always manifested in former research upon this subject. Control cultures, using the identical technique, were made from the blood and from the joints of patients not suffering from rheumatic fever. This series of controls, slightly larger than the rheumatic fever group, indicates the comprehensiveness of the undertaking and adds immeasurably to its worth. The problem of procuring a high percentage of positive cultures is, according to the authors, largely a matter of technique. As experience was gained the percentage of positive cultures progressively increased; of 29 in the 1928 series, 31 per cent were positive; and of 31 in the 1929 series, 83.9 per cent were positive. Thirty-three of the 35 cultures obtained were classified as alpha

streptococci, one a beta, and one a gamma. There was evidence of the existence of a specific biological grouping. In the three cases in which a microorganism was found both in the blood and joint, the identity of the cultures from the two sources was established. These findings corroborate those of previous investigators and make it difficult to escape the conclusion that rheumatic fever is a streptococcal infection usually of the alpha or viridans type. The pathogenesis of rheumatic fever in respect to the joint lesions appears to be analogous to that of infectious arthritis and gonococcal arthritis. Bacterial allergy probably influences the clinical picture in all three conditions, but in each instance the joint manifestations are primarily dependent upon localization of bacteria in the joint, with subsequent infection.

The Pathogenicity of the Species of the Genus *Brucella* for Monkeys—Huddleson & Hallman. *Jour. Inf. Dis., Vol. 45, No. 4, 1929.*

Br. abortus (Bang) is pathogenic for the monkey in which it produces a disease resembling undulant fever. Infection is not readily produced and in many cases does not occur at all. Monkeys are very susceptible to infection from a small dose of the *suis* (porcine) strain of *Brucella*. This is more virulent for the monkey than *melitensis* strain.

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